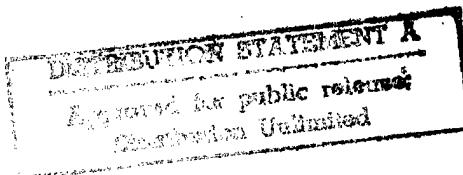


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JPRS-EEI-84-074

25 June 1984



# East Europe Report

## ECONOMIC AND INDUSTRIAL AFFAIRS

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25 June 1984

**EAST EUROPE REPORT**  
**ECONOMIC AND INDUSTRIAL AFFAIRS**

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CZECHOSLOVAKIA

MINISTER OUTLINES PRICE POLICY FOR 1984-1985

Prague FINANCE A UVER in Czech No 3, 1984 pp 150-157

[Article by Decent Michal Sabolcik, Doctor of Science, minister in charge of Federal Price Office management: "Price Policy for 1984-1985"]

[Text] Achieving greater efficiency, quality and performance from our national economy in the remaining year of the Seventh 5-Year Plan will require, under still more rigorous internal and external developmental conditions, the strengthening and further expansion of the positive results which have been achieved so far in national economic development.

The CPCZ Central Committee Plenum of last year discussed in detail both our successes and the problems that we are coping with, the conditions and objectives of our further development. State plan objectives for 1984 were formulated on the basis of directives of the Eighth and Ninth CPCZ Central Committee plenums and are being assured throughout the national economy. A number of measures have been adopted to intensify the impact of the management system on the operation and performance of the economy. Certain systemic measures are being tested in an experimental form in selected economic production units [VHJ] to verify their effectiveness prior to making a decision about implementing them nationwide in the Eighth 5-Year Plan.

In accordance with our economic development concept, the comprehensive activation of the influence of price-cost relationships in the economy, both in the process of planning and management and in the fulfillment of planned, critical economic indicators will play a major role in the remaining years of the Seventh 5-Year Plan.

Price-cost relationships and their utilization must more actively affect the achievement of higher productivity in our economy and the techniques by which we intend to implement the intensification process.

This is a very demanding task. It requires the assurance of a deeper integration of the material and value added criteria of plan formation and fulfillment, of resource sources and allocations, of the activation of price cost relationships in support of public objectives in efficiency and quality.

The urgent need for the development of an active conception of price-cost relationships in support of our national objectives and to cope with a more demanding economic environment for management was emphasized in the speech of CPCZ Central Committee Presidium member and president of the CSSR, Lubomir Strougal, in August of last year, regarding the assurance of the economic development objectives of the CPCZ Central Committee Presidium and CSSR Government. Finance, credit, and to no less an extent prices must exert an active influence in the direction of more effective procurement as well as valuation of the resources invested in the economy. The entire management system and its superstructure, plan objectives, limits, standards, etc., must contribute to an increase in labor productivity, to reduced costs and increased profitability. This will at the same time generate fairer and more strict conditions for the formation and use of financial resources.

A comprehensive and mutually coordinated economic policy and its mechanisms are, in other words, the basis for the achievement of the planned correspondence between material flows and price-cost relationships. One of the fundamental and common tasks of all parts of this economic policy is "to increase the efficiency of the entire set of economic levers and incentives of the economic mechanism, including price formation, the credit and financial system, techniques for the valuation of the results of economic activity, etc." (Text of the speech of the general secretary of the CPSU Central Committee, Yu. V. Andropov, at the CPSU Central Committee Plenum on the draft of the State Plan for the Economic and Social Development of the USSR and the State Budget of the USSR for 1984. TYDENIK AKTUALIT 1984, No 1, p 3.)

The related issues are not being resolved by our economy alone. In other socialist countries as well the urgency of resolving them is coming inevitably to the fore, in conjunction with the specific conditions of economic intensification of a given country.

It is well known that all socialist countries are proceeding with the comprehensive improvement of the entire mechanism of management and planning. Price policy, as an inseparable component of economic policy, occupies one of the most important positions in improving the management system.

#### Price and the Economic Mechanism

In addition to its standardizing function, price acts as one of the valuational mechanisms. Prices serve to link material flows with price-cost relationships. For this reason prices, along with their role and place in the economic mechanism, must be judged both in terms of their purpose in relation to the other valuational mechanisms of which they are components, namely the financial, credit, transfer, redistributive processes, etc., and as a component of the broader instrumental mechanism and management system which acts upon and influences all material flows and the criteria of their evolution.

The objective of price policy is to increase the active role of prices in relation to material flows and valuational criteria in the plan and during its implementation.

The foregoing objective of prices requires that the preconditions be created for them to function in the national economy. We consider one of the most important preconditions to be the development of a healthy tension between financial resources and requirements. Our organizations should not have relatively easy access to financial resources, and the financial resources they do have at their disposal must be allocated and utilized under much more demanding conditions.

Prices must smoothly form and continually renew the real value base of the Czechoslovak economy. The assurance of this task presumes an increase in the importance of prices as criteria for the allocation of resources and, generally, as a factor influencing economic decisionmaking at all levels of management. The same is true for nonprice mechanisms currently in use.

Redistribution processes at various levels of national economic management must not be allowed to moderate the standardization functions of individual management mechanisms, including prices. Failure to do this results in a situation in which differences between well-managed and less well-managed enterprises are blurred, equalization trends are intensified, and the basic directives which were newly emphasized at the Ninth CPCZ Central Committee Plenum, namely the differentiation of quality work from lesser quality work and compensation according to achieved results, are not fulfilled. Redistribution processes must function in a coordinated manner, in a planned manner, thereby strengthening the effectiveness of each of the implemented managerial mechanisms.

It is essential that prices exert a preventive influence on the direction of economic development, which under current conditions means in the direction of economic intensification.

It is, however, true that such an influence may be exerted only by prices which place a true value on current and future trends.

It is well known that a large number of relationships, connections, incentives, as well as the formulation of approaches and decisionmaking itself, depend on the objectivity and efficiency of our prices. Values are assigned in production, in allocation, in exchange and in consumption. We all want these values to be correct, whether it be for the producer or from the viewpoint of the consumer, because this creates objective conditions for decisionmaking, for incentives based on prices. Everyone acknowledges that the proper assignment of value is the first precondition for the no less important active utilization of prices. It is the foundation of price policy.

Objectivity of valuation, efficiency, and therefore also a bases for the active utilization of prices require that priority be given to the recognition of the public interest in the valuational process. Only in this way can a publicly relevant objectivity in valuation be achieved, and thereby also active price utilization. Taking the public interest viewpoint, after all, optimizes all factors which influence the price level, its structure, relationships, active influence and the valuational expression of contributions.

This, however, presumes that a mechanism is functioning which stimulates both producers and users to produce, sell and make use of, at the established prices, the public contribution in production and in use which is incorporated in the price. This is one direction of the impact of this mechanism. It is known as a process for achieving a correspondence between the individual and socially necessary costs embodied in prices, which correspond to a given social level of the satisfaction of requirements in terms of conditions both at home and abroad.

A second direction of price policy influences, through the importance attached to domestic and foreign conditions of production and use, the dynamic development of public criteria for the rigor and correctness of valuation and the increasingly active role of prices.

In the development of criteria for valuation and in prices themselves, therefore, a smooth and systematic correspondence must be achieved between individual and public interests. But even this correspondence has an economically unique and defined rule for the level at which it must appear, namely an increase in the social productivity of labor based on a high level of technical and technological sophistication, the unification, typification and mass nature of production, while assuring high adaptability of production in response to requirements, use, etc. In the words of V.I. Lenin, this is a principled and mass-based step forward to higher labor productivity under socialism than under capitalism, based on what capitalism has achieved. This is the requirement and the most generalized criterion of the pace at which labor productivity is being increased.

In practice this means the assurance of objectivity and rigorousness, but also of the feasibility of the criteria for planning and price formation, at the same time that the high technical and economic sophistication of products is achieved. Standards, norms and cost calculations must be according to an internal, demanding economic base which actively influences the reproduction process and makes possible a comparison of operating and other derived costs with the price, the judgment of impact, and the adoption of necessary measures. This is how a base is arrived at for a broad spectrum of additional relational and decisionmaking reactions.

#### Price Measures in 1984

Price policy will, in accordance with the resolutions of the 16th CPCZ Congress and the related CPCZ Central Committee Plenum, share actively in the remaining years of the Seventh 5-Year Plan in the fulfillment of the material objectives for the development of the national economy established by the Seventh 5-Year Plan and its implementational plans. In the context of the planned management system for the national economy prices have a fundamental function: to offer real criteria and effective incentives for the implementation of intensification processes and to increase the efficiency of our economy permanently.

This is the idea behind rationalization measures in the system of wholesale prices and in the price formation system which were implemented as of

1 January 1984. After the increase in the wholesale prices of material inputs within the context of the one-time modification of wholesale prices in 1982, and after a reduction in the price of silver and of the components base in electronics in 1983, further development of acquisition costs of raw materials from both foreign and domestic suppliers is making it necessary to make further modifications in the wholesale price system by the end of this 5-year plan. These modifications will be reflected in price increases which will smoothly and in a timely manner influence economic inputs, thereby making possible for organizations to adapt in a planned manner to new conditions in the socially necessary costs of production.

As of 1 January 1984, under CSSR Government Resolution No 168/83, there was a one-time increase in the wholesale prices of fuels, energy and certain raw materials, including agricultural raw materials for the food industry. The results of this increase, after all possible compensating measures and moderating steps had been taken, were incorporated into the wholesale prices of selected production sectors and processing industry groups, construction, and freight transportation rates.

The increases occurred primarily in the wholesale prices of primary fuel and energy resources, including increases in the price of coking coal of 24 percent, energy coal of 21 percent, crude oil of 49.5 percent, natural gas for energy generation purposes of 63 percent and for chemical processing of 53 percent, and coal gas of 63 percent. Accordingly, the wholesale prices of coke were raised by 21-24 percent, of electric power by 7 percent, and of thermal power by 11 percent.

For certain other raw materials there were movements of their wholesale prices in both directions. For instance, the wholesale price of bauxite increased by 55 percent, of aluminum by 10.3 percent, of rough flax by 179.3 percent and of hemp by 114.1 percent. On the other hand, the wholesale prices of copper concentrate, molybdenum, tungsten, cobalt and several other significant raw materials declined.

In conjunction with the above one-time increase in wholesale prices, 1984 will see the continuation of the gradual, annual 2 percent increase in the wholesale prices of all fuel and energy resources, and of 20 halers per liter of diesel fuel as a part of moderating measures. The gradual increase in wholesale prices is being fully integrated into the prices of related products and for the most part is not taken into consideration either in planned objectives for cost reductions or in the profits of consuming organizations and sectors.

There were also increases as of 1 January of this year in procurement prices for agricultural products (primarily sugar beets, milk, grain, and meat), coupled with the elimination of subsidized procurement prices. Approximately Kcs 10 billion of this increase in 1984 and 1985 will be absorbed in the wholesale prices of food products without changes in retail prices.

The result of the above-mentioned modifications in the wholesale prices of material inputs as of 1 January of this year was to change the wholesale

prices of 43 percent of related production; the level of wholesale prices in the national economy was thereby increased by 6.4 percent.

The level of wholesale prices has increased primarily in selected sectors of ferrous metallurgy (by 14 percent), construction materials (by 17 percent), construction projects (by 13 percent), the food industry (by 14.5 percent), and in freight transportation rates (by 10 percent).

The incorporation of the impact of increased material input prices has not been carried out mechanically, but in a differentiated and selective manner. The consequences of this have been moderated in above-average profits, in the further reduction in the consumption of fuel and energy resources and raw materials, and in their higher valuation. Substitution processes are also having a positive impact. The result is that about one-fourth of the total impact has been moderated and does not find its way into higher prices in the related sectors. At the same time economic pressure is generated for the acceleration of innovations in final product areas. The above-mentioned 6.4 percent increase in wholesale prices for the entire national economy translates, because of these moderating effects, into an increase of only 4.1 percent for final products and of only 3.1 percent in deliveries for individual consumption. The above development of price levels also includes the impact of the reduction in the wholesale prices of the component base of the electronics industry and of several additional engineering sectors.

The incorporation of the consequences of changes in wholesale prices into plan indicators and the introduction of the valid new wholesale prices of 1 January of this year serves to generate favorable, yet more demanding economic conditions for the implementation of the objectives outlined at the Ninth CPCZ Central Committee Plenum.

#### Planned Completion of Rationalization of Initial Wholesale Price Base for Eighth 5-Year Plan

The plan for wholesale price development for 1985 forms, in conjunction with the modifications in wholesale prices implemented in 1984, a further step in the implementation of a wholesale price system. This includes the completion of the implementation of wholesale prices in the food and paper industries, where they will increase, and in the textile, footwear, leatherworking and clothing industries, where they will decline. In conjunction with revised Czechoslovak State Standards and increased costs of forest management and wood harvesting there will be an increase in the wholesale prices of raw wood, finished lumber, veneers, plywoods, wood packaging materials and other wood-based materials. In the engineering sector further decreases are projected in the wholesale prices of semiconductors, microprocessors and other components for the electronics industry.

These modifications, which increase the wholesale price level of the national economy by 0.6 percent, represent the culmination of the planned development of wholesale prices for the Seventh 5-Year Plan, which has been influenced

above all by the evolution of procurement costs for imported and domestic fuels, energy, raw materials and materials. In accordance with the directives of the 16th CPCZ Congress, the price policy for 1985 is also oriented toward the introduction of higher valuations and the more effective utilization of fuel and energy resources and raw materials.

Modifications in the wholesale prices of fuel, energy, raw material resources, and other raw materials in the first and second halves of the 5-year plan and the annual increase in the wholesale prices of fuel and energy of 2 percent and of diesel fuel of 20 halers per liter assures that the valuation of fuel, energy, and raw material inputs in calculations of the efficiency of economic activity are at a level corresponding to the actual costs to society of their acquisition. This facilitates the utilization of valutional criteria in the planned management of our national economy.

The increase in the standardizing role of prices for the preparation of rational economic measures has been accompanied by the utilization of prices as a tool for increasing the effectiveness of the influence of other techniques of planned management for the conservation and higher valuation of material inputs during processing.

This approach in the price area contributes to the gradual introduction of more intensive management of expensive and hard-to-obtain fuel, energy, and raw material resources.

In accordance with the Set of Measures, the criterion of comparison with the world technical-economic level, especially for export production, is and will continue to be utilized to an ever increasing extent in the remaining years of the Seventh 5-Year Plan for modifications of wholesale prices related to the incorporation of the consequences of increases in the prices of fuel and energy and raw material inputs. Account will be taken of achieved export effectiveness and product quality when determining differentiation of price moderations, price relationships and calculated profitability. This will support incentives for effective innovation, increased quality and the exportability of production.

The strategy of the smooth implementation of wholesale prices of fuels, energy, and raw materials that are based on actual acquisition costs, especially for imports, and their differentiated incorporation into the prices of processing levels is being augmented with the gradual objectivization of wholesale prices in the area of outputs according to the criteria of export effectiveness.

The strategy of the smooth implementation of wholesale prices of fuels, energy, and raw materials that are based on actual acquisition costs, especially for imports, and their differentiated incorporation into the prices of processing levels is being augmented with the gradual objectivization of wholesale prices in the area of outputs according to the criteria of export effectiveness.

Modifications in wholesale prices in 1984 and 1985 are serving to establish a price base for the preparation of the Eighth 5-Year Plan. It may be assumed that the implemented wholesale prices of fuel, energy, raw materials and

materials and the related prices in industry, transportation, construction and agriculture will contribute to the effective utilization and valuation of fuel, power, and raw material resources, which is a top priority in efforts to intensify and make more efficient the development of the national economy.

In accordance with the principles of price policy applied during the Seventh 5-Year Plan, in 1985 the implementation will be completed of wholesale prices for raw material inputs that reflect the development of acquisition costs for their importation and domestic extraction, along with the modified procurement prices for agricultural production. A final decision will be made regarding the results of modifications in wholesale prices for raw material and material inputs in 1984 and 1985 in certain sectors of the processing industry which would otherwise cause a loss situation or substantially reduced production profitability.

While in 1984 the objective of price modifications was to set up input prices within the economy, in 1985 the main emphasis will be placed on the differentiated modification of wholesale prices for outputs which stem from the more demanding criteria of foreign markets and the influences of these markets on our export production.

In 1985 modifications will be completed on the prices of sugar beet, potato, starch and milk industry products, and of certain flavorings and additives for baked goods. With the exception of the fats and tobacco industry sectors and products from artificial casings, 1985 will see the full implementation of wholesale prices in all the remaining sectors of the food industry. The new wholesale prices will incorporate new procurement prices of agricultural products based on their 1984 modifications. It is likewise essential, by increasing the price of raw wood (including imported) by 13 percent, to cover increased harvesting and forest management costs, including the impact of the increased cost of diesel fuels.

In the leatherworking and the footwear industry plans have been drafted to implement a modification of wholesale prices which will incorporate the reduction of wholesale prices for imported and domestic raw leather and other price changes. Reduced wholesale prices for raw leather are possible because of declining world prices of this item.

This makes the outlook for export effectiveness, especially to nonsocialist countries, somewhat more realistic. It has not been promising for leather industry goods, in part because of high raw materials costs.

In the textile and clothing industries it makes sense to complete the comprehensive implementation of wholesale prices which began with their modification as of 1 January 1984 with changes in the wholesale prices of flax, artificial fibers and the related sectors of the textile and clothing industries, as well as the implementation of standardized price formation. For 1985 it remains to complete this implementation in the wool, cotton and silk industries. The modification of wholesale prices will result in more accurate prices for raw materials and materials and make it possible to update the normative base,

which was last adjusted in 1977. Even though it is not a matter in these sectors of significant changes in wholesale price levels, this implementation is very important for improving the quality of relative prices and internal enterprise kholzraschot.

In engineering an additional stage in the reduction of wholesale prices is planned, especially in the components base for electronics, a reduction in the wholesale prices of equipment for the manufacture of passenger cars, etc. These changes will also contribute to making export effectiveness indicators more accurate.

Changes in base prices for the Eighth 5-Year Plan also include smaller price changes in the paper and chemical industry which are important for the actualization of wholesale prices in other sectors and branches. This concerns, for instance, glues, gelatins, synthetic glues, plant protection products, etc. It is also essential to prepare effectiveness standards for price formation in the printing industry, which should also have a positive impact on exports.

Price modifications will be based on planned developments in production costs through 1985. The level of profit and return on investment will be differentiated for specific sectors in relation to the achieved export effectiveness. The relationships between the new wholesale prices will reflect technical sophistication, efficiency, product quality and other operational factors. Making price modifications ahead of time will make it possible to develop conditions for the formulation of the 1985 plan in the new wholesale prices.

In addition to these developmental objectives for wholesale prices, wholesale price changes are also being put through in other sectors of the processing industry which are concerned, above all, with objectivizing profitability in wholesale prices based on achieved export effectiveness. For this reason, the modifications being made in sectors, or rather groups and products, which export at least 20 percent of their output, which have demonstrated above-average profitability, by at least one-third, and where the achieved differential indicator for exports is lower by at least 15 points than the target sectoral average.

Price penalties will also be applied to products which do not achieve at least a lower limit for this differential export indicator. For this reason the wholesale prices are being lowered for products whose export share exceeds 10 percent, for which the achieved differential export indicator is lower than 60, or which are reaching the limit of their technical-economic product life.

In both cases it is essential to set up, through price changes, individual cooperation and component deliveries for the final products which significantly influence low effectiveness for these products, especially for exports.

Along with penalties for less efficient export sectors, increases in wholesale prices will be imposed in a differentiated manner on sectors achieving a differential indicator for exports of more than 120, for which demonstrated production profitability is lower than normal and for which the material conditions exist to expand production.

The price modifications of 1984-1985 are the first steps toward bringing wholesale prices in line with foreign prices, as outlined in the Set of Measures and contained in CSSR Government Resolution No 151/82. It is a demanding and contentious price measure. The strategy for 1985 must be viewed as a verification, restricted to the extreme ranges of export effectiveness. In the Eighth 5-Year Plan the pursuit of this objective will continue, with the emphasis shifting to price reductions in a number of sectors in accordance with objectives for increased labor productivity, reductions in costs, etc.

The implementation of wholesale prices in 1984 and 1985 will create an initial price base for the formulation of the Eighth 5-Year Plan, especially in the valuation of fuel and energy resources, raw materials, and basic materials. For most of the products of the processing industry the new wholesale prices represent a new valuation of the raw material and material inputs and differentiate profitability in accordance with effectiveness criteria derived mainly from the efficiency of exported production.

During the implementation of the Eighth 5-Year Plan the broader application is projected of demanding criteria derived from the conditions of the international division of labor (the merging of domestic wholesale and foreign prices and price relationships). At the same time it is expected that in other areas of management favorable preconditions will be developed for the smooth rationalization of the wholesale price system and for the increased effectiveness of wholesale prices in the system of planned management. For this to occur, however, the internal conditions must be created to support increased labor productivity.

To strengthen the effectiveness of wholesale prices in relation to plan formulation, to its material-valuation optimization, and for its implementation it is essential to rationalize the balancing of price changes and allow for the possibility that in a defined corridor price changes will not fully offset each other and be incorporated into binding indicators and norms. The implementation of operative changes in wholesale prices should become a component of plan formation and the conclusion of consumer-supplier relations.

Significantly more rapid development of the external and internal factors influencing the movement of socially necessary costs has forced the smooth implementation of prices for material inputs, the rationalization of price levels and relations for products of the processing industry. The carrying out of price modifications and planned changes is strengthening the standardizing function of prices. The effectiveness of price incentives is also expanding at the same time that criteria are becoming more rigorous. The initial base for the Eighth 5-Year Plan has been rationalized so that prices can exert a great influence on the creation of conditions for the mobilization of resources and support an evolution of production which would place an effective value on material inputs while at the same time retarding the inefficient use of materials. It is no less important to exert an influence in the direction of improving the satisfaction of requirements from the viewpoint of the structure of demand, which relates to the technical-economic

parameters and quality of produced products. Related to all of the above is the application of moderating influences, differentiation in prices and profitability according to economic efficiency and the extent of input valuation relative to other criteria, and with regard to the ability of a given product to sell effectively on foreign markets. This is the reason that along with the incorporation of the results of wholesale price modifications price pressures are also generated for effective structural changes in production, for modernization and the more rapid adaptability of production programs to new conditions, for increasing technical sophistication, labor productivity, cost reductions, and for an increase in the quality and the saleability of products on domestic and foreign markets. This must be reflected primarily, in final use, in a decline in value, among other things per unit of social utility, which creates the preconditions for price reductions.

In accordance with directives of party and state organs, a number of basic measures have been implemented during the Seventh 5-Year Plan to rationalize the system of wholesale prices and to adapt them more rapidly to changing conditions. These measures are an expression of the necessity for using the price system to increase the productivity of our economy and to develop the process of national economic intensification.

Price policy during the Seventh 5-Year Plan has developed the necessary pre-conditions for increased pressure on conserving and valuing fuels, energy and raw materials and for increasing our self-sufficiency in agricultural products. The price measures which have been adopted have been designed to support an increase in the technical sophistication and quality of production and to speed up an effective innovative process. Together with the entire management system, the preconditions have been created so that significantly better results can be achieved in the foreign exchange of goods.

All of these demanding tasks have forced us to a much greater degree to compare our domestic criteria and standards with the conditions which exist on developed foreign markets. In the price system the differentiation of prices and profits has changed so as to correspond to the level of valuation which our products have received on foreign markets.

All these measures have met the objectives of the smooth actualization of a price system with the goal of assuring the demanding tasks of social development for the Seventh 5-Year Plan and the creation of a rational initial base for the fulfillment of the objectives of developed socialism in the Eighth 5-Year Plan.

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## CZECHOSLOVAKIA

### DEPUTY FINANCE MINISTER DISCUSSES CHANGES IN R&D FINANCING

Prague HOSPODARSKE NOVINY in Czech 4 May 84 p 3

[Article by Eng Stanislav Sourek, CSSR deputy finance minister: "Changes in R&D Financing--Continuity and Flexibility"]

[Text] If the entire R&D process is to be effective, both the scientific and technological research and the practical application of its results must be continuously and flexibly financed. The Eighth Plenum of the CPCZ Central Committee dealt with the question of strengthening the active function of finance. The adopted resolutions provided a stimulus for certain changes in R&D financing, the main features of which this article addresses.

#### Basic Policy

R&D financing is an important, though not the only task of the finance system. This function of the finance system is successfully performed over a longer period. It is borne out by the large amounts spent on the advancement of science and technology which are comparable to those spent by other developed states. In 1983, for example (according to the anticipated results), investment outlays on R&D made from the state budget amounted to Kcs 7.3 billion and those made by the enterprises to Kcs 9.9 billion. It is anticipated that the expenditures for this purpose will amount to Kcs 7.7 billion from the state budget and to Kcs 10.4 billion from the resources of the enterprise economic sphere this year.

#### Question Marks After Investments

In practice, however, we find that money in some funds, particularly in the funds for technological development, is not always used up. The remainder in these funds amounted to Kcs 530 million, for example, in 1982 and to Kcs 500 million last year, that is, always to approximately 5 percent. The allocations to the funds for technological development are made annually in accordance with the planned R&D needs for the given year.

Criticism by the enterprises that proper conditions have not yet been created for transfers of remainders in the funds for technological development to the

next year (transfers of remainders in the funds for technological development of VHJ's [economic production units] are now limited to 2 percent of the fund replenishment per year) must be regarded as justified. At the present time this problem is solved by increasing the limit to 25 percent of this basis, while it is anticipated that the remainders in the funds for technological development will be fully transferable to the next year in the future.

The discussion centers on financing the practical implementation of R&D achievements, particularly with reference to the necessary investments. I am of the opinion, however, that what is at issue is the entire problem of investment planning, decisionmaking on the investment projects, material possibilities of their implementation, the scope of project documentation, and so on, and not financing alone. These questions therefore concern not only the financial sector, although the method of financing investment projects plays an important role.

Investment projects are financed from the specified resources, namely from the development fund and construction fund (beginning in 1983 experimentally from the investment fund in some ministries). The planning of investment resources is linked to the total share of accumulation and investment in the national income. The investment rate therefore cannot be arbitrarily changed by interchanging the sources of financing (such as financing of investment projects from the noninvestment funds which are not included in the investment plan). Although some closely interlinked noninvestment and investment outlays on R&D can be financed from the noninvestment funds earmarked for the financing of technological development (these possibilities are expected to be extended in the future), the fundamental rule that investment related to the R&D problems already solved and their implementation is financed out of the investment funds must be observed.

The problem usually arises when the enterprise (VHJ) either has not included in the plan adequate investment funds in relation to the needs of technological development--this is the defect in balancing the plan--or uses investment funds for other projects and then lacks them for this particular purpose. Also often partly to blame is the insufficient coordination of responsibility for the application of R&D achievements (for example, on the VHJ level) with jurisdiction in decisionmaking on investments (for example, on the ministerial level). This is to some extent corrected during the experimental verification of the investment fund. The VHJ jurisdiction over the decisions on investment projects, including their financing, is likely to be generally extended in the future, and this should contribute to better coordination of R&D tasks with the implementation of their results in the investment area.

The implementation of R&D results through investment projects can and must be facilitated also by the simplification of regulations governing the preparation of investments (project documentation, approbation procedure and so on), which will also result in the simplification of terms of financing.

## Principal Changes Proposed

If the entire R&D process is to be effective, conditions must be created for operational flexibility in all areas of management, including the implementation phase. This also applies to financing.

Experience with the present system of financing noninvestment outlays on R&D leads to the conclusion that use must be made of all possibilities offered in this area by the Set of Measures, but in addition certain revisions are desirable. On the basis of work carried out so far on the proposals for changes in the planned management system after 1985 the following fundamental changes appear to be imperative:

- the R&D cost should be essentially borne by the realizers in order to increase their comprehensive responsibility;
- the VHJ and enterprise funds for technological development should be set up on the basis of the norm (specified in the 5-year plan) and their remainders should be fully transferrable to the next year in order to ensure the long-term nature of decisions on and financing of R&D;
- provisions should be made for above-the-norm allocations to the fund for technological development from the usable profit of VHJ's and enterprises at their discretion, and for transfers to the fund of supplementary revenues derived from further implementation of R&D results;
- conditions should be created for financing from the fund for technological development and for extending credit on the purchased machinery, equipment and pilot plants related to the promotion of technological development on a larger scale than in the past. The possibility should be explored of financing on a limited scale from the fund for technological development the machinery and equipment for the solution of these problems as well, particularly in the marginal situations. The possibility should also be explored of financing these investment projects from the fund for technological development in combination with the allocation of profit above the specified limit. The appropriate form of financing (within the operating cost of basic research organizations) for providing them with necessary instruments and equipment should be found;
- financing from the fund for technological development should make possible the exchange of basic R&D forms (solution of scientific and technological problems, purchase of licenses, purchase of results from other organizations).

Most of these measures aim at strengthening the continuity and flexibility in financing between individual years and also at the interchangeability, on a limited scale, of funds for technological development and investment projects. These problems must be analyzed in detail in terms of present procedures and also of the system of R&D planning and financing, and replacement of capital assets (investments) that is being considered for the Eighth 5-Year Plan.

The entire system of finance, including R&D financing, must preserve and strengthen its khorraschet nature. It must increase VHJ and enterprise responsibility for producing the necessary financial resources and exert pressure for economic contribution to R&D financing. For this reason it is imperative, primarily through the analysis of profit increase in planning and reality, to quantify the contribution of R&D and to combine it with the incentives for appropriate departments in the enterprise or VHJ. This method has been experimentally tested in several VHJ's since last year.

#### Future of the Innovation Fund

According to the resolutions of the Eighth Plenum of the CPCZ Central Committee, the expediency and feasibility of setting up and using a unified fund (in VHJ's and enterprises) for financing R&D and its results should be explored, from which the noninvestment expenditures and investments necessary for the entire R&D cycle would also be financed.

We can say in brief that such a unified innovation fund would conform to the need for unity in the entire innovation cycle and could lead to the desirable continuity in financing all of its phases. Under certain conditions it would offer VHJ's and enterprises the possibility of making prompt decisions on the most suitable form of R&D by enabling the interchangeability of two basic factors--technological development and replacement of capital assets. The innovation fund could also simplify paperwork and eliminate controversial or conflicting situations in the financing of technological development.

The technical aspect of establishing an innovation fund, however, poses a number of problems. Its establishment and proper functioning is predicated upon the enactment of several measures not only in the area of financing, but also and primarily in other areas. It is not possible to consider a simple merger of the fund for technological development with the investment fund or with part of it. Such a solution would involve considerable risk. In a number of instances the present strong pressure to make new investments would lead to focusing on them alone and to reducing the funds earmarked for technological development proper, which could result in the reduction of innovation effects.

If we wanted to prevent this, it would be necessary to formulate rules for the internal use of the innovation fund--to work actually with two funds within one, which would not be of any help in anything.

The innovation fund could produce positive results only if the necessary prerequisites were created, particularly in:

--the synchronization of jurisdiction and responsibility of individual levels of management for decisions on technological development projects and replacement of capital assets;

--the planning of technological development and capital investment in order to achieve the unification of or at least a rapprochement between these two areas;

--a revision of the management structure in the organizations which would result in the subjugation of the entire innovation process (including the implementation of investment projects) to one person;

--the resources of the innovation fund so that technological development and investment projects would be financed essentially from homogenous financial resources, with simultaneous examination of the most convenient forms from the standpoint of administrative simplicity;

--accounting;

--the system of planning and financing of those investment projects which are not related to innovations and would not be financed from the innovation, but from the investment fund (such as construction of power generation, transportation and similar facilities, nonproductive investments such as social and ecological investments, expansion of plants' capacities, simple replacement and reconstruction of buildings and of various facilities).

Only under these conditions could the innovation fund attain the specified goals. Since this is not a simple affair, it is indispensable that the problems related to the innovation fund be thoroughly studied and eventually verified at the beginning of the Eighth 5-Year Plan through an experiment making use of the innovation fund together with the related measures in selected VHJ's in various sectors. On the basis of the results, the decision on its application on a larger scale or generally in the entire national economy should then be made.

#### Contribution of Research

The organization and active effect of the system of financial management, economic incentives for the organizations of basic research and the application of intraenterprise khorraschet in the preproduction departments exert great influence on the entire R&D cycle. The basic research organizations in our country for the most part assume the nature of economic organizations. In other words, they operate on the khorraschet principle.

Effective technological development and its implementation is strongly affected by the linkage between financial incentives for these organizations and results derived from R&D. From this standpoint the closer linkage of incentives for the basic research organizations to the economic results achieved by the entire VHJ is most effective.

It is also necessary to create conditions for linking personal incentives for the workers of basic research organizations to the practical application of R&D achievements. This is already being done in the GDR and it would be suitable to do the same thing on a larger scale in our country. In this context, analyses of profit increase derived from the contribution of R&D and application of their results are important for the economic incentives for the basic research organizations and their workers.

Very often the view is expressed that economic incentives and the financial management of organizations engaged in basic research are not sufficiently effective, primarily because of the present system of setting the prices for basic research work. This is true, but solutions must be found to remedy this undesirable situation, both in the area of prices (including the use of given possibilities of incentives) and in determining the most effective basis for financial, and particularly personal, incentives which should consist not only of the output or profit, but also of the R&D contribution.

All this speaks in favor of a closer linkage between the system of financial incentives for the basic research organizations and the results of the entire organizational unit in which the basic research organization is incorporated (VHJ or enterprise). It appears that this intention is more successfully carried out in the intraenterprise departments engaged in research and development than in basic research organizations themselves within VHJ's.

The above-mentioned problems do not exhaustively deal with all relations between the financial resources and R&D. Also important, for example, are the questions of consolidating the funds earmarked for R&D in budgetary organizations (for example, between the Czechoslovak Academy of Sciences institutes and colleges and universities) or in budgetary organizations and economic organizations. Most of these regulations in the area of finance, including the amended SBIRKA Decree No 163/1980, will become effective in 1985. Great attention is being paid in this context to coordination with the other areas of the planned management system, intelligibility of regulations and desired reduction of paperwork.

10501  
CSO: 2400/329

WATER SHORTAGE FORCES FOCUS ON BETTER MANAGEMENT

Prague RUDE PRAVO in Czech 27 Feb 84 p 1

[Text] Sources of water, whether surface or underground, belong among the most important elements of national wealth, and they are also one of the basic components of the environment. A weighty problem is created by the fact that technical and economic development not only multiplies the rate of extraction of this natural resource but also, at the same time, brings about many negative results with respect to the purity of streams and water sources. That is why also in our country the securing of a sufficient water supply and its protection have become one of the most timely issues.

Among the main tasks following from the conclusions of the 16th Party Congress is the primary duty of water managers to ensure the necessary amount of water for supplying the population, agriculture and industry through the development and protection of surface and underground sources of water. Furthermore, their task is "to expand the water supply system and the sewer system; to increase the proportion of the population supplied with water from public water mains and living in dwellings connected to sewer systems. Improved maintenance will decrease the loss of water in the water distribution system. Sensible water conservation is to be enforced. Construction of purification facilities for waste water will solve the problem of the most important sources of pollution."

On balance, the effort of water-resource managers toward the fulfillment of the above-mentioned objectives in the past 3 years of the Seventh 5-Year Plan shows that it is possible to realize many of them successfully. For example, at the end of last year, the proportion of the population supplied with drinking water from the public water distribution system reached 73 percent, and more than 60 percent of the population of the CSSR is connected to public sewer systems. In the course of the last year alone the length of the water-supply lines was extended by 1100 km, and the sewer lines increased by more than 300 km.

The increase of water consumption can be regarded as a mirror reflecting the increase of living standards. For instance, in Slovakia, where in 1948 statistics showed a consumption of 123 liters per person, a consumption of more than 400 liters has been reached today. Understandably, this increase necessitated considerable investment for the construction of water supply

systems. Now in the SSR 35 significant water-supply systems providing drinking water to almost 2 million inhabitants are in operation. It is possible to note a similar effort in the CSR as well, where already roughly 77 percent of the population is connected to the network of public water supply lines. In the CSR it remains until the end of the 5-year plan to secure an additional one percent of inhabitants utilizing the waterline system in order to fulfill the planned objective.

Simultaneously with the construction of water distribution systems, appropriate water supply sources must be secured. For instance, in Slovakia in the last 20 years water resource managers built and put into operation water sources with a capacity of 15 cubic meters per second. In spite of this, the issue of water resources remains one of the most pressing issues to be solved by water resource managers in the entire republic.

Specifically, we have to secure a desirable pace of capital investment which --alas--especially in water resources management is rather behind the plan and, above all, behind demand. This is often so only because the supplying organizations, construction and others, prefer to focus their capabilities on construction projects which are designated as priority ones. The majority of water supply construction projects, however, do not have the above-mentioned designation, even though securing a sufficient supply of high-quality pure water certainly should not be absent among the primary objectives of the entire society.

A further primary worry of water supply managers is concern for water purity. Even though water conservation to prevent pollution is given greater and more consistent attention, it still does not meet the need. Waste water from cities, residential developments, industry, and agriculture pollutes surface streams and water reservoirs as well as some underground water sources.

Extraordinarily dry weather both during the last year and also in 1982--which ranked among the driest in this century--was responsible for worsening, especially in certain areas, the conditions for supplying the population with drinking water. Even at the beginning of this year a notable lowering of water levels was being recorded. For instance, at the end of February 1984 the water reservoirs in the SSR were filled roughly only up to 40 to 50 percent of their capacity. Some reservoirs, such as Hrinova, were filled up to only one-quarter of their normal capacity. In the CSR the situation is not much better. The number of extraordinary measures adopted proved it, too. In 630 communities and cities in the CSSR the consumption and supply of water had to be regulated, water trucks had to supply drinking water to almost 240 communities.

It is necessary to point out that the overall balance of water management is also worsened by constantly high water loss brought about both by the poor technical condition of the distributing system and insufficient conservation on the part of the consumers of drinking water. It is necessary to realize that securing a sufficient amount of both drinking water and water for other uses is not only a concern of water supply managers, but also of consumers, both individuals and organizations.

Prospects for precipitation are not promising even for this year. The meteorologists predict that the deficit in precipitation from last year and the year before last will continue. This requires above all a prudent water conservation policy. However, it also calls for a rigorous prevention of water pollution. Above all, this means wherever needed to at least start without delay on the construction of purifying facilities for waste water, and to do the maximum for the speedy completion and start of operation of the appropriate facility (in the CSR alone this concerns about 1200 plants which received in recent years a government). However, it also requires that responsible employees devote much greater care than they have until now to such facilities, the malfunction of which may mean an often irreparable accident, because it can irreversibly damage water resources.

All citizens must not only realize the importance of water as a basic condition of life, but also make this realization a starting point in their use, conservation, and, above all, protection of water. Water has been until now one of the cheapest necessities of life--perhaps too cheap--but precisely this fact should make all of its users not take the risk of wasting it and worsening the present situation. It appears more and more clearly that there is no surplus of water, and there might not be one even in the future. However, it is impossible to do without water, and therefore it is necessary to regulate its use strictly.

12634  
CSO: 2400/278

FINANCIAL, PRACTICAL DIFFICULTIES IN USE OF ROBOTS CITED

East Berlin SPECTRUM in German No 4, Apr 84 pp 5-7

[Article by Dr. Anneliese Braun, Central Institute for Economics: "What Makes Industrial Robots Effective"]

[Text] Robots can weld, work with gases, and toxic substances, they can spray car bodies, they can go down into well shafts. This development is due to the circumstance that present-day technology is increasingly developing into a data-processing system in which microelectronics constitute the nucleus. But is their use always well prepared with a view toward maximum effectiveness?

Until 1983, about 32,000 industrial robots<sup>1</sup> were installed in the GDR national economy. At the same time, studies showed that attention will in the future have to be focused more and more on a high effectiveness contribution. Lessons learned so far show that, especially in the case of freely programmable industrial robots, the effectiveness capacities are often still being employed incompletely, among other things, because the consequences in terms of economic organization are not being given sufficient consideration and because, during the task assignment phase already, we do not always sufficiently start with the altered conditions as regards national economic effectiveness which exist in comparison to the mechanization and automation solutions of the 1960's and partly also the 1970's. It is particularly important here to make sure that industrial robots will make a demonstrable contribution to comprehensive intensification, that they will especially help tap effectiveness capacities which will accommodate the altered reproduction conditions of the 1980's and 1990's<sup>2</sup>. Making the specific characteristics of effectiveness increase through intensification the point of departure and the driving force for faster scientific-technical progress is a task which concerns not only the industrial robot program. In view of the order of magnitudes connected with the preliminary performances and in view of the significance of industrial robots for flexible automation as a long-range main factor in productivity increases, it becomes, however, particularly clear that effectiveness capacities are not helping the national economy enough or that

effectiveness losses would have to be preprogrammed from the very beginning if the altered conditions are not taken into consideration.

Since the material resources in each case are rather at a minimum, the emphasis is above all on those solutions which combine scientific-technical innovation processes more closely with the better utilization of what we have available. This is why the industrial robot program of the Tenth Congress of the SED<sup>3</sup> also included those handling devices which are not freely programmable<sup>4</sup> but which facilitate savings at comparatively low preparatory performances and payments in relatively short periods of time. These possibilities must be put to much better use because they can help earn preliminary performances for freely programmed industrial robots by a factor of 4-10.

Under average conditions, it is possible to save one worker per shift with presently available freely programmed industrial robots and in this way we can achieve a 20-40 percent increase in labor productivity--including expenditures for the manufacture and operation of industrial robots--(when we use industrial robots in groups, the increase can be two-fold to four-fold); the time of return on investment is 1-3 years. In the USSR metalworking industry, the saving potential of industrial robots for the next 10 years, with 120,000 industrial robots, has been estimated at about 350,000 workers, with annual cost savings of about R1 billion<sup>5</sup>. Material savings are also important. For example, a paint spray robot on the average uses 20-30 percent less paint than a worker whom he replaces.

Related to the national economic target requirements, the saving potential of the industrial robot equipment to be employed according to plan in the GDR between 1981 and 1985 would be as much as 112,500 workers. This means an industrial labor productivity increase of about 3-4 percent. Considering the current state of affairs, the first generation of freely programmed industrial robots could make it possible to save a maximum of 2-3.5 percent of the jobs in the metalworking industry. Considerably greater productivity effects can be expected in the future through the use of second and third generation industrial robots within complex solutions of flexible automation. On an international basis, it has been estimated that this could eliminate about 30 percent of the jobs in the metalworking industry. That would signify a productivity increase--per blue-collar worker and white-collar employee in the metalworking industry--of about 22-24 percent and of more than 9 percent for industry as a whole. But the employment of these effectiveness capacities will take a longer period of time. To be able to translate this into reality, effectiveness criteria will have to play a considerably bigger role in the determination of production and utilization preferences. This concerns particularly

preliminary work also in the course of economic competition, without which no top-level achievements will be possible in the future.

#### Industrial Robot Use Depends on Effectiveness Potential

Looking at it overall, the potential fields of application of industrial robots could be characterized by the fact that, for example, in industry, more than one-third of the production workers are still doing manual work, with approximately 40 percent being employed in assembly where manual labor on the average accounts for almost 70 percent. Considering the current level of the average manpower release expenditure in industry, which comes to about M65,000 in terms of basic assets for the period of 1970-1980, the replacement of those work functions would necessitate investments that would come to about twice the 1982 industrial investments. In view of these orders of magnitude, it is necessary to concentrate the head-start work for new types and higher generations of industrial robots on those fields which promise the greatest effectiveness increase from the angle of the national economy. Here we cannot get along without a careful economic study of the direct and indirect effects deriving from the particular operational utilization cases. In an initial approach to main employment points from the national economic angle, the ratio between the expenditures per industrial-robot-work-station and the effect plays an important role. If we start with the assumption that, on the average, one worker is replaced by one industrial robot per shift, then the effectiveness of its use is essentially influenced by the way in which the onetime expenditure per industrial-robot-work-station and the resultant saving in expenditures for the reproduction of that worker [Labor Force Unit] will relate to each other. During the early stage of the development and use of industrial robots, the onetime expenditures per industrial-robot-work-station are considerably higher than the savings that are connected with the replaced worker, specifically, by ten times and more<sup>7</sup>. The economic effects therefore are still relatively poor. During this stage it will be socially effective to use industrial robots above all to replace labor being done under difficult conditions. Social effects here play an important role as decision-making criterion because one can only improve a certain part of the working conditions with the limited available investment. The lower the onetime expenditures per industrial-robot-work-station in relation to the savings--which are connected with the replacement of the workers--happen to be, the greater will be, from the economic viewpoint, the possibilities of making greater use of industrial robots for the automation of labor-intensive processes to begin with; but the sector in which social effects become attainable will also grow all the more. Still, this does not mean that social indicators are less significant as economic effectiveness goes up because new questions regarding their utilization arise along with the greater leeway for social effects.

At this time--also from the international viewpoint--the use of industrial robots still exerts relatively little influence on the entire process of releasing workers. But if we keep in mind that--as estimates in a series of combines revealed--in many cases between three and five work stations are involved, until a released worker reaches the work station desired for re-use, then the 1981-1985 industrial robot program would on the whole directly or indirectly affect about 10 percent of the work stations in industry. Moreover, industrial robots, as well as office automation, mean that more and more workers, who belong to the so-called problem groups, can be replaced; that includes clerical jobs or women in the middle age groups, to the extent that they have had OJT or to the extent that they are unskilled. A high degree of effectiveness deriving from industrial robots in use is an important prerequisite for earning the funds necessary for the solution of the attendant social problems.

#### Differentiate in Keeping with Operational Conditions.

As studies showed, further effectiveness reserves can be drawn if the standards for the release expenditure per worker are differentiated in keeping with the particular operational conditions of the industrial robots<sup>8</sup>. This is borne out by the fact that, in the particularly asset-intensive and labor-intensive sectors, the expenditures and effects of industrial robots deviate greatly from the national economic average. For example, the per capita output in the textile industry and in metallurgy differ considerably for each other in the particular studies. The expenditures and savings connected with various types and generations of industrial robots also differ greatly. On an international scale, these differences between simple and more highly developed industrial robots go all the way up to a factor of 5 and partly even 10. By virtue of the definition of industrial robot equipment, as used in management and planning, these differences are even greater in the GDR.

If these differences are not considered, there may be effectiveness losses. In asset-intensive sectors, such as metallurgy, this could inhibit the further replacement of manual labor because here, as a rule, comparatively high asset advances are necessary to replace one worker. In contrast to that, this would only help ineffective solutions in labor-intensive sectors. Rough estimates revealed that, in the various sectors of the metalworking industry, the targets for the release expenditure roughly correspond to the national economic average; in asset-intensive sectors (such as in metallurgy) they would have to be higher and in particularly labor-intensive sectors of the light industry they would have to be lower in order to guarantee the adequate effectiveness of industrial robots. These differentiated requirements would also have to be given greater consideration in the development and production of new types of industrial robots.

## Way to Save Production Assets

Looking back over the years, the replacement of manual labor until now has been connected not only with ever higher asset advances but also with their increase per product unit. The continued replacement of manual and mental routine labor will continue to work in that direction; however, counteracting tendencies are developing simultaneously in conjunction with the greater utilization of microelectronics. When industrial robots are used, this is expressed, for example, by the fact that not only workers are released but that, moreover, additional effects are attained, such as higher and more uniform product quality, less rejects, material savings, saving of current assets, better utilization of basic assets in terms of time, greater flexibility in assortments, and thus higher continuity of production. This emerges particularly when industrial robots are used in flexible automation systems<sup>9</sup>--of which there are several hundred prototypes in existence at this time worldwide. It has been estimated that about 15 percent of all machine tools made during the 1980's are to be components of flexible automation systems<sup>10</sup>. The use of industrial robots in flexible production systems can play a key role in the future in order to open up new sources for productivity increases in processes involved in small and medium series production for which rigid automation solutions have not been effective so far. Their standing is made clear by the fact that rigid automation on the average is applicable only in about 20-40 percent of the production of the metalworking industry. Flexible automation solutions will assume greater practical significance if higher-generation industrial robots can be used in large numbers; the effective use of the first generation of freely programmed industrial robots still presupposes mostly high identical unit numbers<sup>11</sup>. In the GDR metalworking industry alone, this would create basic changes in the production method, in the character of work, and in the national economic interrelationships over a longer period of time for almost 600,000 production workers, in other words, more than 15 percent of the total number of persons employed in industry. But this quantitative aspect is not the only important thing here. The use of industrial robots and flexible production systems is an inseparable component of the development of the corresponding automation means which alone will make it possible extensively to utilize the effectiveness potential of new technologies, such as microelectronics. But this calls for high absolute preliminary performances and advance payments for research and development as well as for investments in certain fields to a hitherto unusual degree. At this time, the procurement costs on the main commodity markets for an industrial robot are between about M30,000 and M300,000, depending upon

the purpose, the output, the number of joints, and the number and degree of complication of the control function. If we roughly equate the average one time expenditure per freely programmed industrial robot at a figure of 1--just to illustrate some orders of magnitude--then it will be at least 15 times that amount for a flexible production system. The effectiveness of the presently produced and industrial robots thus plays a growing role in the effort to prepare future top-level technologies at the right time. We must be fully prepared for the fact that the availability of national income for accumulation purposes over a longer period of time can be increased only through additional effectiveness increases.

Main Utilization Areas of Industrial Robots in the USSR, the GDR and Japan

	USSR 1976-1980	GDR 1980	Japan	
			1980	1990
Charging Robots	About 45	60	48.5	35.3
Machine Processing	About 25		6.6	3.4
Foundry Processes	6	25	5.7	6.1
Coating Products	2	15	11.4	7.5
Welding Robots	0.5	-	27.8	47.7

During the 11th Five-Year Plan (1981-1985) the USSR is planning on a particularly fast growth of the following practical application sectors:

For foundry processes--six-fold;

Paint spray robots--ten-fold;

Welding robots--20-fold.

Source: EKONOMIKA i ORGANISATSIYA PROMYSHLENNOGO PROIZVODSTVA, 2, 1982, p 42; Paessler, EINHEIT-14, 2, 1979.

FOOTNOTES

1. Mostly industrial robot equipment for specific processes, although the number of industrial robots to be used in a flexible manner in specific processes grew above average.
2. See "Berich des ZK an den X. Parteitag der SED" [Central Committee Report to the Tenth Congress of the SED], Reporter, E. Honecker, Berlin, 1981, pp 50, 51.

3. Ibid., p 56
4. A similar but not identical approach as, for example, in Japan.
5. See EKON, GAZETA 26, 1982.
6. In their entirety, that means: average wage plus expenditures from social assets.
7. In Japan and in the United States, at the beginning of the 1980's, this ratio, related to freely programmed industrial robots, averaged about 2-2.5:1 (about 10 years ago it was still 12:1 in Japan).
8. According to the target requirements, 2.5 workers are to be released per industrial-robot-work-place for the national economic average and the one time advance expenditures are to be repaid through savings within a maximum of 3 years.
9. Partial solutions worked out so far, like numerically controlled machine tools, combine industrial robots, computer-assisted designing and production. In 1981, there were about 300 flexible production systems worldwide, including 40 in Japan, 30 in the United States, and about 10, each, in the USSR, Czechoslovakia, Hungary, and the GDR.
10. This does not include the production cells or centers which are employed in isolation and which are only an element of those systems.
11. On an international scale, for example, industrial robots are still being used predominantly, with high unit production numbers, for tool handling, as well as for coating, point and line welding, deburring, and joining. About 15 percent of the freely programmed industrial robots are used for charging cutting machine tools, including about one-third for small unit numbers although this share keeps growing.

#### PHOTO CAPTION

Scientists at the Central Institute of Cybernetics and Information Processes are working on the sensitivity of robots. This "smart" grabber is provided with sensors and can thus detect objects, can grasp them gently, and can roughly recognize the dimensions and contours.

5058  
CSO: 2300/503

FDGB FUND ALLOCATIONS DETAILED, ANALYZED

East Berlin TRIBUENE in German 17 May 84 p 5

[Unsigned article: "What Happens to Union Funds?"]

[Text] Agitation, Propaganda, and Education

M55.3 million were spent in the field of agitation, propaganda, and education; M25.5 million of that amount came from the labor union treasuries. The 187,394 schools of socialist labor with 3,696,201 participants held a special place here. They are a proven forum of education work by the labor unions and they help further consolidate the class viewpoint of the members so that the working class will be able increasingly successfully to play its leading role in socialist society.

The money was furthermore used for skill training for more than 2.3 million part-time officials, especially the contact men, so that they would be able successfully to accomplish the tasks assigned to them, upon their election, in daily labor union activities. M26 million were spent on advanced training for labor union officials at the "Fritz Heckert" Labor Union College attached to the FDGB Federation Executive, the central and special schools of the FDGB federation executive, the bezirk labor union schools, as well as the kreis education facilities.

Culture

A total of M107.6 million were spent for labor union cultural activities. A major portion, that is, M89.9 million, were used for the services provided by the labor union base organizations. These considerable financial resources were available to the labor union groups for their many different cultural activities on the basis of the cultural and education plans, as well as the 270,500 teams that struggled to win the honorable title of "Collective of Socialist Labor."

Around 9,847,000 visitors and performers participated in 3,687 enterprise festivals. Money was made available to the 355 labor union-managed

cultural houses which recorded more than 23 million visitors for 240,000 performances, the 1,752 labor union libraries with an inventory of 9.45 million books, and almost a million users, as well as the 12,000 folk art groups with 220,000 members.

Extensive art propaganda, field trips, the award of contracts to artists and the cooperation of the working class with the artistic intelligentsia as well as cultural-political activities by way of preparation for the 20th Worker Festivals of the GDR in Gera Bezirk were likewise financed with money from the allocations for the cultural work of the labor unions.

#### Youth and Sports

Overall, the FDGB spent M51.7 million for youth and sports. That includes M48.3 million from the exchequer of the labor union base organizations. This money was spent for the development of creative activities of young people, for the care and socialist education of children, as well as for physical culture and sports. In particular, the movement of the Fair of the Masters of Tomorrow was promoted; 836,374 young people participated in it and 156,004 assignments were given to them. More than half of that number were drawn from the science and technology plans.

As happened during last year, sponsorship work with more than 5,600 schools between 95,000 school classes and labor union groups, as well as events connected with youth initiation, the International Day of Children, the Pioneer Birthday, and the children's Christmas celebrations were also supported. Money was made available for the further development of career competition and for vacation arrangements for about 8,000,000 students in about 5,000 enterprise vacation camps as well as for the "Day of the Youth Brigades" during the "Week of Young People and Athletes."

On the basis of the joint sports program of the DTSB [German Gymnastics and Sports Federation] of the GDR, the FDGB, and the FDJ, the regular sports activities of 1.4 million labor union members were promoted, along with the more than 30,000 departmental, sector, and enterprise sports festivals with about 2.5 million participants; 20,734 teams and 206,981 participants in the enterprises took part in the FDGB cup competitions which had a mass-sports character.

#### Assistance and Honors

M202.2 million were spent for assistance and honors, including M121.5 million from the labor union treasuries of the base organizations. The parents of

158,786 newborn children were given a birth allowance of M30. Labor union sickness support payments were made to 696,951 members. The labor union directorates cared for 1,325,405 sick workers. A total of M65.2 million were spent for this purpose; 124,065 labor union members received assistance totalling M7 million.

Furthermore, 14,394 members were honored for many years of uninterrupted membership in the FDGB and in other free labor unions recognized prior to 2 May 1933; 205,161 veteran labor union members were given a regular quarterly assistance payment for which a total of M41.5 million were spent. Awards for good part-time work were given out to 1,348,293 labor union officials, with an expenditure totalling M49.3 million.

Natural or accidental death benefits in the amount of M26.4 million were paid out to the survivors of 99,902 labor union members.

#### Vacation and Recreation

FDGB expenditures for vacations and recreation, including expenditures for investments needed for the new construction and reconstruction of vacation homes, came to M409.9 million. M262.1 million of that amount were made available through the government budget. Compared to the year before, it was possible to increase the capacity further, among other things, through the completion of the "Friedrich Engels" vacation home in Templin and the "Ernst Thaelmann" vacation home in Rheinsberg. Almost five million trips were available to labor union members and their dependents for their vacations in labor union and enterprise vacation facilities.

The number of FGDB trips made available rose to 1,873,000. More than 335,000 children spent their vacations together with their parents in the vacation homes of the vacation service of the labor unions; 77,280 preventive treatment programs were carried out in the vacation homes of the FDGB.

Overall, the FDGB vacation homes has 683 rest homes with about 59,000 beds available. In addition to these union-owned homes, the labor union vacation service has available more than 74,000 beds in contract houses and private facilities, as well as more than 2,383 beds in the seven most beautiful hotels of the GDR.

#### FDRB 1983 Expenditures

Executive and Committee Activities	M163,166,797
Agitation, Propaganda, Education	M 55,263,369
Culture	M107,634,215
Youth and Sports	M 51,694,551

Assistance and Honors	M202,175,909
Work Safety	M 21,556,237
Vacation and Recreation, Including	M409,918,549
Reconstruction and New Construction of	
Vacation Homes	
Administrative Expenditures, Including	M 82,320,314
Maintenance and Expansion of Basic	
Assets	

**FDGB--Almost 1.1 Billion for the Sake of the Members**

In 1983, the FDGB concentrated the full strength of its more than 9 million members on the further implementation of the resolutions of the Tenth Congress of the SED, on the resolute fight to preserve peace and for the welfare of the people. In the course of socialist competition, the workers of the GDR achieve high results and thus decisively contribute to the successful continuation of the primary mission in terms of its unity of economic and social policy. In conjunction with the fight for the national economy's higher performance power, the labor union executive committees and directorates effectively influence the planned improvement of working and living conditions.

The Sixth Conference of the FDGB Federation Executive heard reports on the successful work of the labor unions in the execution of the resolutions of the Tenth FDGB Congress during the Karl Marx Year of 1983. This fact is also expressed in the results of financial policy work. The continually rising dues revenues--they went up 2.5 percent compared to 1982--again confirm the great confidence of the labor union members in their class organization and are the result of good, conscientious work by the contact men and the labor union directorates.

In 1983, the FDGB made almost M1.1 billion available for the pursuit of the interests of the labor union members, for their education, their cultural and sports activities, their recreation, for the care of their children, as well as for assistance and honors.

**M160.3 Million for Solidarity**

The pronounced moral and material solidarity, which the labor unions have been providing for decades, is inseparably connected with the high prestige which the FDGB enjoys worldwide. The voluntary solidarity donations given by the labor union members again and again make it possible in many different ways to practice class solidarity. In this way one can give not only proletarian-internationalist aid but recognition and support can also

be given within the FDGB to many veterans who have proven themselves in labor union life.

In 1983 likewise the FDGB did voluminous solidarity work. Overall, M160.3 million were spent for solidarity.

#### M100 million for the Solidarity Committee

The GDR Solidarity Committee was given M100 million to carry out central solidarity actions. Out of that amount, M65.1 million were spent for the training of workers from many countries in the GDR. M1.4 million were made available for medical care. Material solidarity benefits were paid out in the amount of M33.5 million; this included especially gifts of medications, medical-technical equipment, training materials, sports articles, equipment for crafts workshops, tents, blankets, bicycles, and clothing.

#### Support for the Work of the WFTU

The FDGB supported the work of the WFTU and the international labor union organizations affiliated with the WFTU as well as the WFTU solidarity actions with its membership dues and the contribution for the international solidarity fund in the amount of around M2.8 million.

The FDGB made M1.34 million available for study, vocational training, therapeutic treatment and care of foreign workers in the GDR, as well as the care of children from the Polish People's Republic in GDR enterprise vacation camps during the 1983 summer vacations.

#### Care for Veteran Labor Union Members

Care for veteran labor union members in the GDR is an important aspect of solidarity work. A total of M42.2 million were spent for that purpose. This amount includes M37.4 million used through labor union base organizations for [words missing in photostat]. The FDGB once again gave the Central Committee of Popular Solidarity M2,250,000.

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CSO: 2300/505

GERMAN DEMOCRATIC REPUBLIC

ROLE, ECONOMICS OF ROBOTICS IN AGRICULTURAL SECTOR

East Berlin AGRARTECHNIK in German No 5, May 84 pp 191-193

[Article by H. Simon, H. Kremp, G. Andres, Chamber of Technology, Ministry for Agriculture, Forestry and Foodstuffs: "Further Tasks in the Development, Production and Use of Robots in the Agriculture, Forestry and Foodstuffs Economy"]

[Text] The further output increase in agriculture, forestry, and the essential foods industry is inseparably connected with the accelerated use of scientific-technical progress. Here, both technical and economic as well as social aspects point to the broad use of microelectronics and robot engineering. In primary agricultural production but also in product processing and in the preliminary service sector, physically heavy and monotonous work is still widespread. The important thing now is in all sectors of agriculture, forestry, and the essential food industry to do intensive research, development, and rationalization work in order to develop solutions that are ready for use to the fullest extent and to apply them in practice with a high economic effect.

The KDT [Chamber of Technology] competition on the promotion of the accelerated and broad-scale application of microelectronics and robot engineering in agriculture, forestry, and the essential food industry, which was completed in 1983, contributed decisively to the development of additional solutions and to the acceleration of scientific-technical work. The important thing now is, on the basis of the application program, to guarantee the broad and economic utilization of all solutions that were submitted. On the whole, the pace achieved so far is not enough to meet the agriculture, forestry, and food industry targets for the year 1985 in the field of robot engineering.

1. Development of Scientific-Technical Lead Time

The preparation of adequate scientific-technical lead time is of fundamental importance in order from the very beginning to work toward the complex

use of robots with maximum economic effect. This calls for the solution of comprehensive problems that result from the following specific conditions of agricultural production and product processing:

Agricultural production is partly accomplished out in the open (crop production and forestry);

Production involves living organisms and is tied to a fixed biorhythm (vegetable and animal production);

Agricultural production is of a seasonal character (crop production and preparation);

Agricultural production and product preparation are accomplished in an extensively decentralized fashion due to the connection with the agricultural utilization area. There are certain limitations on the concentration of production in preparation and also partly in the processing of products for reasons of optimum transportation management (for example the dairy and meat industries).

This means that preparations for the use of robot equipment are subject to the following specific requirements:

Single-shift work predominates both in agricultural primary production and in processing; in some sectors, there is no year-round work due to seasonal conditions.

Agricultural products differ considerably from each other in terms of type, size, and composition and cannot be transformed through "design" measures so that they can be easily handled by robots, such as, for example, eggs, fruit, vegetables, skins, animal carcasses, cheese, grain, and others. The robot equipment to be developed must meet these requirements.

Conditions for agricultural production and processing are steady over long time intervals and do not urgently require the use of freely programmable robots on a broad scale (for example, production of bottled grade-A drinking milk).

Here is what that means as regards research, development, and utilization preparation of robot equipment:

For use in agriculture, forestry, and the essential food industry, it is necessary to work out mostly solutions designed for specific processes which meet the particular operational requirements.

Robots that can be used in a flexible manner for different processes must be employed where a high degree of shift utilization is guaranteed.

To ensure the economical utilization of robot equipment, the expenditure per operational task must not exceed an average of M100,000.

The following task complexes are involved in the development of scientific-technical lead time through the Academy of Agricultural Sciences of the GDR, the scientific-technical-economic centers of the essential food industry, and the scientific facilities of the combines and VVB [Associations of State Enterprises] in all sectors of agriculture, forestry, and the essential food industry:

Performance of process analyses for the scientific exploration and optimization of work processes, including physical or mathematical definition of biological processes;

Analysis and classification of technological requirements for robot equipment in all sectors of agriculture, forestry, and the essential food industry with the objective of working out universally usable solutions and thus reducing the development expenditure for robot equipment.

Development and testing of robots for new fields of application through the use of progressive action principles and definition of requirements for the development and use of robot equipment.

Boosting lead-time work for the use of second and third generation robots through the application of sensor systems from the items supplied by industry, development and testing of specific sensor systems for agriculture on the basis of structural components produced on an industrial scale, as well as drafting of development requirements for sensors to be used in agriculture, forestry, and the essential food industry, to be followed by the transfer of these items to industry.

Stepping up technological research with the goal of planning robot-supported technologies and increasing preparation of complex solutions, including the rationalization of supervisory and accounting tasks.

In this connection extensive use must be made of robots that can be used in a flexible manner for different processes as well as specific robots that are available from the assortment of items offered by industry and the central robot construction division of agriculture, forestry, and the essential food industry.

## 2. Development of Robots

The list of robotics equipment items for use in agriculture, forestry, and the essential food industry currently contains 67 different types, including nine designed for flexible use in conjunction with certain processes, and 57 solutions designed for specific processes. The large number of required

solutions is due to the specific requirements in the individual sectors of agriculture, forestry, and the essential food industry.

At this time, users can draw on 21 different types of robots, including 11 robots from the enterprises of the central robot construction division of agriculture, forestry, and the essential food industry in the enterprises of the Agricultural Equipment Repair Combine VEB. Most of the robots are still in the developmental stage. This is shown clearly by the efforts that must yet be made by the development and production teams in order to make robots ready for use in production by the specified deadlines and to make them available to users with a high quality standard.

Past experience teaches us that it is necessary to develop and test robots for specific complicated operations and technical tasks in agriculture--for which new working and action principles must be worked out and tested--in the context of applied research in Academy of Agricultural Sciences of the GDR in the method study institutes, in the scientific-technical-economic centers of the essential food industry, and in the scientific installations of the combines and VVB. The development and design capacities in the enterprises of the central robot construction division in the Agricultural Equipment Repair Combine VEB are to be employed primarily for the design of robots on the basis of known and tested working and action principles. This process, which involves division of labor, is to be organized in close cooperation between the scientific installations listed and the Agricultural Equipment Repair Combine VEB.

The development and design capacities available at this time, however, are not yet enough to complete the required development tasks on schedule and with a high quality level. This is why the measures required for the goal-oriented expansion of these capacities must be carried out in close cooperation with the competent territorial agencies in all sectors of agriculture, forestry, and the essential food industry and especially in the enterprises of the central robot construction division of agriculture, forestry, and the essential food industry. Selected robots, whose development has already been completed or whose development can be completed soon, are compiled in Table 1. The users must include them much more in the preparation of their operations.

Table 1 - Selected Robots From the Assortment of the Central Robot Construction Division of Agriculture, Forestry, and the Essential Food Industry

A. Sequential No.	B. Type of Robot	C. Practice Guideline	D. Manufacturer
		M1,000	
1	Charging Robot BR 10h-III	60	VEB Rationalisierungsmittelbau (RmB) Grimmenthal
2	Charging Robot BR 20p-III	60	VEB LIW Jueterbog
3	Modular pneumatic Robot Building Block System BKS 1/15	Max. 180	VEB LIW Jueterbog
4	MAG-Welding Application Robot ASR 1-II	143	VEB PVB Charlottenthal
5	Welding Connection Robot VSR 1-II	230	VEB PVB Charlottenthal
6	Dismantling Screw Unit DSE 1-II	120	VEB RmB Grimmenthal
7	Assembly Screw Unit MSE 1-II	130	VEB rmB Grimmenthal
8	Basket Exchange Robot KWR 1-III	27	VEB LIW Jueterbog
9	Packaging Robot for Glasses and Cans EPR 1-IV	30	VEB LIW Naumburg
10	Charging Robot for Grid Box Pallets BRG 1-IV	46	VEB LIW Naumburg
11	Stacking Robot STR 1-I	392	VEB LIW Naumburg
12	Stacking Robot rabo 16/STR 2-IV	100	VEG Obstbau Borthen/WEB
13	Stacking and Edging Assembly Line for Soft Cheese Production ST UW 1-IV	170	VEB Rationalisierung LTI Neuenhagen
14	Technological Unit for Production of Liquid Whole Eggs TTR 20p-IV	80	VEB LIW Jueterbog
15	Weighing Robot WR 2-IV	20	VEB Rationalisierung LTI
16	Moist-Measurement Sampling Robot FPR1h-IV	35	mittelbau und Getreide-technik Kavelstorf
17	Follow-up Milking and Removal Robot NAR/M 623-IV	5	VEB Rationalisierung LTI Neuenhagen/VEB Anlagenbau Impulsa Elsterwerda

### 3. Robot Production

Four enterprises of the Agricultural Equipment Repair Combine VEB have been designated as central robot producers for the in-house manufacture of robots in agriculture, forestry, and the essential food industry. The output capacity of these enterprises must be increased continually so that 80 percent of the robots to be made in agriculture, forestry, and the essential food industry will be produced there. Users must increasingly be offered complete solutions, that is to say, robots including the accessory equipment. This high goal calls for the faster and all-around strengthening of these enterprises. Only an efficient robot construction division will make it possible to turn out robots with maximum effectiveness and quality, to implement light-weight construction consistently, to reduce the expenditure of material and energy, and to guarantee higher reliability and availability of robots.

Other robots will be made in the rationalization equipment construction sections of combines and enterprises, for example, in the Kavelstorf Rationalization Equipment Construction and Grain Equipment VEB in the Waren Forestry Equipment Combine VEB and in the Borthen Fruit Cultivation VEG. In addition to that, robots are being made in the rationalization divisions of combines, VVB, and enterprises for use in their own operations. The in-house construction of robots should be started basically only if no solution is available for the particular task from the central robot construction division.

### 4. Robot Use

As of 31 December 1983, agriculture, forestry, and the essential food industry were using a total of 690 robots, including:

429 in the dairy industry,  
101 in the meat industry,  
66 in the agricultural equipment enterprises,  
37 in the sugar and starch industry VVB,  
11 in the industrial livestock production combine VE [state-owned]

The number of robots received in 1983 however shows that operational preparations must be considerably stepped up in all sectors of agriculture, forestry, and the essential food industry in order to attain a faster tempo in robot utilization and in order completely to meet the state plan targets.

To speed up operational preparations, it is necessary to work toward the fast practical application of first-use examples as well as the installation and intensive utilization of consultation bases in order to pass the lessons learned during operational preparation and transfer to the following users. Selected first-user enterprises are shown in Table 2.

Tabel 2. Compilation of Consultation Possibilities With First-Users of Robot Equipment in Agriculture, Forestry, and the Essential Food Industry

Operation	Robot Type	First User	Usable as of
Apple Preparation	Stacking Robot STR 1-I Weighing Robot WR 2-IV Rimming Robot	VEG "Walter Schneider" Eisleben	Immediately
Liquid Egg Mass Production	Stacking Robot rabo 16/STR 1-IV Weighing Robot WR 1-IV Technological Unit TTR 20p Technological Unit TTR 20p Punch Robot TR 20p Packaging Robot for Eggs APR 1-IV Follow-up Milling and Removal Robot	VEG Obstbau Borthen VEB KIM Koenigs Wusterhausen VEB Gefluegelwirtschaft Neubrandenburg VEB KIM Koenigs Wusterhausen LPB (T) Jaenickendorf (Bezirk Potsdam)	Immediately Immediately Immediately June, 1984
Egg Packaging Follow-up Milking of Cows	Basket Exchange Robot KWR 1-III Dismantling Screw Unit DSE 1-II	VEB Milchkombinat Berlin VEB LIW Erfurt VEB LIW Halle	Immediately July, 1984
Drinking Milk Production Screw Work	Charging Robot BR 10h-III Charging Robot BR 20p-III	VEB LIW Demmin VEB LIW Jueterbog	Immediately Immediately
Charging a Press Charging a Rotary Machine DRT80a Charging a Separation Grinding Machine	Charging Robot BR 20p-III	VEB LIW Jueterbog	June, 1984
Charging a Drilling Machine BS 25	Charging Robot BR 20p-III (Markendorf)	VEB KfL Jueterbog	Immediately
Repairing Scrub-Clearing Machine Wheels	Robot Line with Freely Programmable charging Robot	VEB KfL Bitterfeld (Wolfen)	Immediately

The important thing now is to guarantee the rapid follow-up utilization of the tested solutions and increasingly to prepare and transfer complex solutions for the use of robots.

## 5. Economy of Robot Use

In order to achieve a noticeably greater useful effect deriving from science and technology in line with the economic strategy charted by the Tenth Congress of the SED, the following economic targets were established for the economic evaluation of robot use:

Expenditure per robot, maximum M300,000,  
Release of at least 2.5 workers per robot,  
Time of return on expenditures [investments]: maximum 3 years.

These requirements have so far been met by only a few selected examples in agriculture, forestry, and the essential food industry. There are considerable deviations in a large number of specific operational cases. There are objective but also subjective reasons for that. In preparing for the use of robot equipment, it is necessary above all to work toward a higher manpower release level. Heavy physical labor, which is still widespread, must be eliminated through the use of robots, such as, for example, in the marketing of fruit, vegetables, and edible potatoes. The use of robots can considerably reduce the manpower shortage still existing in some sectors of agriculture, forestry, and the essential food industry. For example, it is possible to save one worker through the complex employment of the follow-up milking [remilking] and removal robot in the multiple [fishbone] milking stand. At the same time, the milker's job is made more attractive through the implementation of considerably better working conditions.

Likewise very important are the economic effects deriving from the use of robots which lead to a higher farm product output as well as to a measurable improvement in quality and which thus help achieve a higher profit in the user enterprise. By employing the remilking and removal robot, it is possible, for example, to expect a milk output increase of about 5 percent and a reduction in udder diseases.

It is possible to release between four and five workers per shift, at an expenditure of M80,000-100,000 through the use of the technological unit for the procurement of liquid whole eggs. The liquid mass yield attained here is of great importance in making savings due to the use of these robots. Because the egg yield that can be obtained here is higher compared to manual operation, it is possible here to achieve a surplus production of egg mass and thus to guarantee a higher economic effect. The return time on the one time expenditures is less than a year.

By using a moist-measurement sampling robot, it is possible to release up to three workers, of course only during the time of the grain harvest. The economical utilization of these robots however can be guaranteed by making sure that the energy expenditure for follow-up drying will be reduced and that the grain quality can be preserved better through the fast determination of the moisture content in granular crops that are ready for harvesting.

These examples show how widely the economic effects deriving from the use of specific agricultural robots can be. In determining the effectiveness of robot use, it is necessary to pay attention to the complete recording of all economic effects in the application of the "methodology for the economic evaluation of the use of industrial robot equipment," with special emphasis on specific conditions prevailing in agriculture, forestry, and the essential food industry; these effects are aimed at the following goals:

manpower release,  
output increase,  
loss reduction,  
quality improvement,  
energy and material expenditure reduction.

To guarantee a high economic benefit, it is very important to restrict the expenditure for the release of one worker to a maximum of M120,000.

## 6. Conclusions

Regarding further work in the field of robot engineering:

Efforts to create scientific-technical lead time for the expansion of robot use and the preparation of the employment of second and third generation robots must be stepped up considerably;

Complex solutions--which will guarantee exemplary user savings--must be prepared increasingly through the design of technologies in keeping with robot characteristics;

Development tasks must be completed on schedule and with a high quality level and the developed robots must be produced at low cost, using modern, technological methods;

Technically and economically convincing solutions must be made available by the first-time users and the lessons learned must be passed on for the benefit of follow-up users;

Robots from the central production facilities of industry and from the robot construction division of agriculture, forestry, and the essential food industry must be used on a priority basis;

The enterprises must account for all produced and employed robots in a strict manner.

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CSO: 2300/502

GERMAN DEMOCRATIC REPUBLIC

RATIONALIZATION, IMPORT CUTS CAUSE 'HIDDEN UNEMPLOYMENT'

Hamburg DIE ZEIT in German 18 May 84 p 36

[Article by J. Nawrocki: "There'll Be Hell to Pay Yet"]

[Text] "Withdraw your application if you do not want to lose your job. There are enough people waiting in the wings." This is what one GDR citizen was told at the appropriate department in the district council when he went to make an application to leave the country.

What was surprising about this was not that a person who wanted to go abroad was threatened with the loss of his job. Thousands of applicants have been without work for months or even years; they live by the sale of their belongings, by support from friends or relatives, or by doing illicit work. Compassionate clergymen list on their payrolls as churchyard gardeners dozens of such people, often academicians, who have lost their jobs in this way. Consequently, the graveyards thus tended are also called "departure cemeteries." On the contrary, what is unusual about the statement quoted is the fact that at an agency of the GDR it is being openly said that there are unemployed people on the streets.

In the GDR there have always been underemployed workers behind the factory gates, and in recent years there have been more and more of these. The fact that in the GDR officially there has been full employment and for many long years even a shortage of manpower has always been explained by Western experts in terms of the low productivity of the East's planned economy. According to its own information, industry in the GDR has limped along at a level about 30 percent behind the comparable Western countries; in agriculture the productivity gap has even grown. Whereas 20 years ago the GDR's agriculture per worker was still producing two thirds of the output of FRG farmers, now this figure is barely more than half.

If the GDR's economy were to achieve the same production with the West's labor productivity, it would be unable to employ millions of workers. Western economists have introduced the concept of "hidden unemployment" for this phenomenon.

But by now unemployment in the GDR is not merely hidden. It is openly manifesting itself--both outside and inside the factory gates. For one thing there are the thousands of people wanting to go abroad who have lost

their jobs not for economic but for political reasons. Politically untrustworthy teachers and artists as well are often without work or commissions--career bans a la the GDR.

With the drastic price rise for crude oil and the GDR's rigorous energy conservation measures, a second category of unemployed people has arisen. Reductions in taxi travel, in goods transport, in works transport, and in other service sectors have deprived thousands of vehicle drivers of their jobs. Either they have had to find other employment, or for a large part of their working hours they sit idly in their old service vehicles and are kept busy as a matter of fact with maintenance work and odd jobs.

But in the GDR another problem is becoming more and more aggravating. In the last 3 years more than 200,000 workers have been put out of work through rationalization and structural change. Up to now it has been possible to transfer the majority of these to other jobs, often even within the same enterprise. But in the GDR a largely balanced labor-market situation has developed from overemployment and a manpower shortage; the demand and supply of workers roughly balance each other. At least it cannot be ruled out that if there continues to be sweeping rationalization, in the foreseeable future underemployment and actual unemployment will arise.

Surely this will be helped along also by the "Decree on the Contribution to Social Funds," which entered into force on 1 January 1984 and which imposes on the enterprises a levy of 70 percent on wages, a sort of payroll tax. The squandering and amassing of manpower--given the low wages hitherto, not all that uneconomical--will become too expensive for the enterprises.

Certainly unemployment in the GDR has been exaggerated by Western media. The assertion that there are 50,000 to 100,000 people unemployed in the GDR sounds altogether improbable. In addition to the unemployment for political reasons, there is above all unemployment limited in location and time due to rationalization and transfers, as well as because of order shortages; but the circle of those affected by this cannot be very large.

But there are instances: A chocolate factory in Tangermuende was shut down because the raw materials cost too much foreign currency. The carburetor factory in Triekendorf was closed because there were no orders. The people employed there had to look for new work. A metallurgical enterprise in the northern part of Berlin closed its factory gates; its employees were offered jobs at the other end of the city, with more than 1 hour's travel time.

The laying off of workers on a large scale began in 1978 with the so-called "Schwedt Initiative." Following the model of the Soviet chemical combine of Novopolotsk, the workers at the Schwedt Petrochemical Combine VEB [State Enterprise] proclaimed the motto "Fewer Can Produce More": Through comprehensive rationalization measures, manpower was to be acquired from its own work force for new production facilities. This initiative was sparked by a decision of the SED party leadership, which then turned it into a nationwide competition.

Since then, 28 percent of the work force of the Schwedt combine has been redeployed, and in the bezirk of Frankfurt/Oder alone--in which Schwedt lies--more than 180 enterprises followed this example. In this bezirk, from January 1978 to June 1983 a total of about 13,300 workers were put out of work; of these, it proved possible to reemploy 11,500 in the same enterprise, and 1,700 employees were redeployed in the agricultural sector of the bezirk. From this it follows that other industrial enterprises have absorbed few released workers.

In most of the enterprises of the GDR, labor recruitment has ceased; the previously familiar signs on the factory gates--"We are hiring: Mechanics, vehicle drivers..."-- have become rare. The reciprocal enticing away of workers and the cost-generating turnover of employees caused by this scarcely exists any more.

Instead the job-hunting ads in the newspapers have increased. In many cases women are seeking part-time employment, but frequently even highly-qualified specialists such as mechanical engineers, economists, industrial managers, and craftsmen are also looking for interesting work: "Economist, technical school, female, 39, seeks interesting work. Many years of experience in sales, purchasing, and exporting, at present sales manager, send reply to RA 9554/A, DLK, 7010 Leipzig, P. O. Box 240." Because frequently it becomes a difficult task to offer the laid-off workers an appropriate and also acceptable job.

Employees' protection against dismissal is especially far-reaching, in accordance with the Labor Code (AGB) of the GDR. According to § 56 of the AGB, dismissal without notice is possible only in the case of a "grave breach of the socialist work discipline or of civic duties," and even this can be done only after "all educational or disciplinary measures have met with failure."

The prerequisite for a dismissal within a prescribed period is that prior to this the worker is offered either an amendatory contract concerning the taking up of other acceptable work, or a transference contract. An amendatory contract regulates the redeployment of workers within the same enterprise, while a transference contract has to do with the taking on of the worker by another enterprise. Only if the party involved refuses both options is it possible to dissolve the employment situation.

Since transference into another enterprise is only seldom possible, workers who have been put out of work frequently are offered jobs which do not correspond to their level of training. Thus, as the trade-union newspaper TRIBUENE reported in February, one woman who had been a chemical technician was offered the job of cleaning woman after her maternity year had expired.

Jobs are often offered in other enterprises which entail traveling long distances, and thus they are rejected by the workers. In such cases as well, terminations are given.

The director of the labor office in the Berlin district of Lichtenberg admitted recently in an interview "that about 50 percent of the citizens

come to us only when they are already out of work." Then the jobless, who in the GDR are officially called "job-seekers," are given an allowance of 300 to 350 marks per month.

The labor offices were created in 1979 in the East-Berlin districts and in five large cities of the GDR. They are supposed to above all place laid-off workers in other enterprises, more specifically according to their qualifications as much as possible. But that is a problem.

Under the headline "Not Enough Workers--Is That Now Past?" the BERLINER ZEITUNG wrote: "The qualification and occupation structure is not yet in line with the requirements of the economy to the requisite extent." Evidently this is true even for those just beginning their careers. In a reader's letter concerning this article, it was pointed out "that it is still true that not a few people, above all young people, want to change the profession they have learned and do 'exotic' work."

In the future that will be the case even more frequently. The structural change caused by technology, which the West German economy in part has already passed through, is just now commencing in the GDR. There, computers and robots are catching on only slowly.

Thus the trade magazine WIRTSCHAFTSWISSENSCHAFT wrote that of the roughly 154,000 jobs for draftsmen, development engineers, design engineers, and project-planning employees, on the basis of the present level of technology about half of them could already be eliminated. In their place, 12,800 computers would have to be used, but in fact there are only 300 such computers at present.

Thus the GDR is still facing a few labor-market and social problems. More and more, skilled workers with comprehensive training who can be employed in a variety of positions are being called for, in order to avoid having unemployment on a greater scale than it is already.

#### Better to Not Speak About It

As has been the case also with previous wage disputes in the FRG, although the press and television in the GDR are giving detailed reports about strikes and demonstrations, they are concealing the specific grounds for this dispute and the demands being made. The reason: Whereas in the FRG a work week of 35 instead of 40 hours is being demanded, the great majority of the just under 9 million workers in socialist Germany still have to work almost 44 hours a week. And instead of the 30 days of vacation time for most people in the West, only 18 to 21 days are allowed in the East.

Between 1980 and 1983 the average gross wage rose from 1,030 marks to about 1,100 marks, thus by an amount just under 7 percent--as much as the union IG Chemie is now demanding just for 1984 alone. Moreover, in the GDR that wage increase was almost completely gathered back in again through governmentally decreed price increases.

There is no official talk about lowering the retirement age. But then given a productivity of labor which is lower than in the FRG by about a third, by no means can the GDR afford to indulge in such debates.

WORKER PARTICIPATION IN MANAGEMENT DISCUSSED

Zurich NEUE ZUERCHER ZEITUNG in German 29 May 84 p 6

[Article: "Codetermination in Hungary's Enterprise Management Beginning in 1985"]

[Text] The monthly magazine TARSADALMI SZEMLE has just printed the guidelines on the "further development of economic management" which had been adopted by the Central Committee of Hungarian Socialist Worker Party already on 17 April and on which we have so far had only a few isolated hints in press commentaries (see NEUE ZUERCHER ZEITUNG, No 122). Accordingly, the economic reform launched in Hungary in 1968 is to be expanded, starting next year.

Budapest, 27 May--There is a constant hustle and bustle on the impressive boulevards of "red" Budapest where the building facades are being restored to monarchist glitter through daring renovation projects. In contrast to Belgrade, there are no power outages here that would cause the multicolored neon lights to go out. In contrast to the rather sober mood in the architecturally no less impressive Prague, merchants offer their abundant supply of vegetables and fruits very loudly. There is hardly anything in this city on the Danube to remind us of the chaotic supply situation in Warsaw. In describing everyday life in Budapest one is still inclined to fall back on the old cliches about "successful gulash communism" or about the most cheerful barracks in the Eastern camp." Still: Hungary's big economic problems are unmistakable. And that the Hungarians since both petroleum shocks during the 1970's had to tighten their belts somewhat, that the inferior quality of export products is causing trouble, that foreign currency is in very short supply and that efficiency in the industrial enterprises is not exactly the best--all of these are things which are not kept secret in government statistics either.

Continuation of Pragmatic Reform Process

This is the background against which the local party leadership has come out with its decision to step up the reform efforts made in 1968 even more, starting

next year. This is all the more so since, in medium-range terms, Hungary's economic outlook can be considered to be rather on the glum side.

It was not by chance that Polit bureau member and Central Committee Secretary Ferenc Havasi in the speech he delivered to the Central Committee and which was just printed by TARSADALMI SZEMLE, recalled the "real threat of a low development level." In spite of these difficulties, the naturally still rather general guidelines of the Central Committee on "further development of economic management" make it clear that Budapest does not want to do anything hastily. If anything, the party body's resolution would seem to outline a development process for several years and even with this strategy of small steps they are not aiming for any experiments. This is expressed not so much in the passages in the Central Committee resolution where once again the dogma of central economic management is being upheld--something which after all was probably intended to assuage Moscow. Instead, the Hungarian leadership's pragmatism and caution emerge in its ideas about the desire for co-determination of the personnel in government enterprises which represents the really new aspect in the Central Committee's reform plans.

The guidelines unmistakably indicate that the enterprises involved are to continue to be government property in the future and that the central government machinery will always have the last word as the sole company owner. Anybody who construed past Hungarian press commentaries on the Central Committee resolution, welcoming the introduction of more democracy into the enterprises, as a turn toward the Yugoslav self-management model, will thus be disappointed.

This kind of sudden change in direction moreover would have been extremely surprising not only from the political angle, but especially also in view of Belgrade's sobering experiences with its autonomy model.

#### Appointment and Discharge of Managers

To introduce co-determination, the Central Committee guidelines call for the creation of an enterprise council for medium and large government enterprises whose functions are to be discharged by the enterprise assembly in small firms. According to the Central Committee resolution, the enterprise council will henceforth be able to appoint, grade, and if necessary again discharge the company manager. This body moreover has the job of determining company strategy (decisions on very significant projects) as well as supervising the management which must direct the enterprise operationally to attain the company plan worked out by the enterprise council.

The decisive thing, of course, is also the question as to who will set the tone in the enterprise councils. In its resolution, the Central Committee does

not yet go into details as to the precise distribution of seats or any possible veto rights; but it does mention expressly that, along with the worker representatives, the manager is to have a seat on the enterprise council along with management members appointed by him, as well as the company's party, labor union, and communist youth organizations which are to be represented with one delegate each, on the enterprise council. This means that there really would not seem to be any further doubts as to the fundamental power claims by the government and the party.

The Central Committee text adds anyway that the State was the highest control body for the enterprise council and that the State would also decide about the field of activity, about the closing of enterprises and the founding of new ones.

#### Agricultural Cooperatives as Models?

Interesting reference points as to the goals of this contemplated co-determination, which is expected already starting in 1985, also emerge on the occasion of a press conference given by the Hungarian Chamber of Commerce at the time of the Budapest Industrial Fair which was opened last Wednesday. When questioned about the model for the guidelines, Chamber of Commerce General Manager Dr. Gerd Biro hinted that they were not guided by the Yugoslav road but rather by the successes of the agricultural cooperatives whose members are supposed to be more motivated and thus also more productive because of their joint responsibility for the enterprise. The introduction of co-determination was also pictured as a step toward the elevation of motivation and increased autonomy by the former lady Minister of the Light Industry Keserue who is now on the board of directors of the Chamber of Commerce. Moreover, the enterprise council as a rule would be expected to decide in a more objective fashion than a ministry far away from the company's activities. According to Keserue, management positions which are to be newly staffed are to be announced publicly hereafter in order to achieve the technically optimum manning of the management.

#### Promotion of Performance Principle

If Hungary's economic reforms in past years again and again aroused attention, this was primarily due to the fact that the country's leadership permitted the development of the so-called "second economy," within which small enterprises (crafts and service enterprises close to the consumers) home-work outfits, work associations, etc., could be working on their own. To be sure, this private-economy "enclave" in Hungary is still small and is moreover being played down by the government; nevertheless, the legalization of this parallel economy would appear to be the actual yeast for the Hungarian economic cake. This can be said to a lesser extent about past reforms in the area of the government economic sector for which physical plan targets and operational

regulations for the individual operations were abolished starting in 1968. This was an attempt to manage the economy in a central fashion, indirectly, through "economic levers" (credit, price, wage controls, etc.) in order thus to increase the independence of the enterprises which, moreover, were to be increasingly exposed to the rough wind blowing on the market. Quite apart from the fact that any government inclination toward the market forces would probably run into fundamental limitations, the Central Committee's guidelines show that past reforms in the government economy sector were not particularly successful.

The strengthening of the principle of competition, which was emphatically demanded by the Central Committee, at any rate is highly significant. In this connection, the Central Committee is announcing a price system more in line with the market as well as a further reduction of price subsidies although the need for central price controls is once again stressed here. To boost competition, the all-powerful industrial trusts are to be further split up. To be sure, the individual components, which have thus been rendered independent, are still allowed to engage in cooperation on a voluntary basis.

According to the way the Central Committee wants it, there is to be increasing emphasis on the performance principle in the development of wages. The idea is to work toward greater income differentiation which supposedly creates material incentives for qualitatively high-grade and more productive work performance. But that also introduces the need for a progressive income tax.

#### Reform of Banking System

The Central Committee is obviously also thinking about a more efficient and more decentralized structure for the banking system. It would thus be necessary to differentiate between the actual bank-of-issue-function, government financing, and the pure commercial bank function. This points to the fact that Budapest is willing to restrict the sphere of tasks of the National Bank--which currently still performs the functions of a credit bank--to the exercise of a monopoly on bank notes and on foreign exchange management as well as borrowing abroad. The Central Committee guidelines in any case stress the fact that the latter three task areas must continue to be carried out in a central fashion.

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CSO: 3620/320

## POLAND

### WATER SUPPLY, FLOOD CONTROL, LAND RECLAMATION DISCUSSED

Warsaw LAD in Polish No 13, 1 Apr 84 pp 1, 3

[Article by Ryszard Janusz Baj: "Report on the State of Water"]

[Text] "The Institute of Meteorology and Water Economy has issued a report that the water level in the main rivers in Poland has maintained its average state and has been...." These everyday reports are not especially interesting to the average reader. But when the reports state that the water level is high, the listeners pay more attention, as high water can bring either hope or tragedy. Water is a very threatening element; when the river has a high water level, floods can come to a wide area and people can lose the results of their work, their belongings or even their lives.

Flood. Even ancient peoples had this experience, witnessing the submersion of entire cities. In Poland, the first recorded flood, in 988 AD, is in Dlugosz's "Annals" of 1118. There were four floods in the 13th century, two in the 14th century and six in the 15th century. In the next 3 centuries, there were 24 catastrophic floods. In the 19th century, there were 20 floods, the most dangerous of which was in 1813, causing Napolean's army in Silesia to surrender. However, the 20th century has set a record: more than 30 floods. Floods in Poland have a different character. They include those caused by excessive rainfall in the summer (they are usually in the upper course of the Vistula and Oder Rivers), by snow melt and water accumulation in the lower course of the rivers, by ice jamming of the rivers and storms on the sea coast. The most numerous and threatening floods are those caused by rainfall; they can be especially hazardous to agriculture. They also destroy the infrastructure in the cities and communication. This is why it is important to counteract this occurrence.

Protection against flooding can be active (to control the water level by building a storage reservoir) or passive (to provide for an easy flow and to protect against flooding through regulation and river embankments).

According to J. Bielakowski, director of the Department of Internal Waters and Waterways in the Office of Environmental Protection and Water Economy, there are currently in Poland around 130 storage reservoirs having a capacity of 2.9 billion cubic meters. However, only 30 (of which half were built after the war) are exclusively for flood control. Barely one-fourth of the need for 500 million cubic meters of storage reservoirs (or those capable of taking excess water), is covered--the 30 storage reservoirs hold 380 million cubic meters.

Under construction are another 10 (for a combined antiflood reserve capacity of 360 million cubic meters), which also will serve the water needs of the nearest cities. These storage reservoirs will be put into use in 1984-1987. In the next 5-year period seven more are planned, with a comparable capacity. Therefore, we are still far from satisfying the needs in this area.

A similar situation exists with passive protection. Into the network of over 90,000 kilometers of water collectors in Poland go 24,000 kilometers of mountain streams, 67,000 kilometers of small rivers and 7,600 kilometers of large rivers. The worst situation exists in the mountainous areas. Only around 15 percent of the streams are used for flood control, whereas the needs exceed 50 percent. These figures speak for themselves. During the course of intensive rainfall, the network cannot control the flooding, causing enormous losses in agriculture and the communications infrastructure. Of course, in mountainous areas floods are unavoidable. The only question remaining is the size needed to control intensive rainfall and the quality of construction of flood-control streams.

A slightly better situation exists concerning the regulation of the main river system. Seventy percent of the waterways are regulated. However, the needs remain great, and the large rivers still tend to flood during thaw, rainfall or ice jams. We should remember the tragedy in the Plock and Wloclawek provinces during the 1982-1983 season--there is not much embankment to prevent flooding. There are only around 9,000 kilometers; another 5,500 kilometers are needed. However, 3,500 kilometers need to be reconstructed, as the embankments were built many years ago.

This is not a trivial problem. The embankments protect from flooding 1.2 million hectares of land, where there are 270 factories, 1,057 villages and cities and 350,000 people.

There is also not a very good situation existing with the regulation of small, lowland rivers. Only 41,000 kilometers out of 67,000 kilometers are so regulated. One must remember that they stand threatened, as good functioning of the system could contribute a great deal to flood control. Unfortunately, as a result of the blockage of the flow network and the incomplete functioning of drainage equipment, large losses take place. According to K. Borowski, secretary of the Main Antiflood Committee, only in 1980 during a rainfall flood did losses reach 20 billion zlotys (in agriculture--18 billion, infrastructure--1.2 billion, communications--0.7 billion).

Speculation exists in the Main Antiflood Committee that jobs will increase to regulate the river network and to build embankments. However, these actions will not be adequate enough to cover the requirements. The embankments themselves reduce valley retention, hampering the flow of water from the fields and increasing the threat to lower-lying areas. They are not always based upon economic principles and thus it is necessary to synchronize these jobs with the drainage of threatened areas.

#### The Necessity of Drainage

Around 5 percent of Polish territory is threatened with flooding as a result of swollen rivers. However, the greatest danger--especially for agriculture--is rainfall accumulation in the soil, which in essence can occur anywhere.

Counteraction to this negative phenomenon requires the working out and the implementation of a widely developed plan for drainage, especially since one can see a significant increase in harvest. As indicated in research conducted in the second half of the 1970's on 40 selected areas, the growth in production on 1 hectare after drainage was 11.7 units of grain on cultivated soil and 17 units on grassy soil. These numbers do not require further comment.

Written under the direction of Director W. Redlinski in the Department of Drainage and Water Supply to Village and Agriculture, Ministry of Agriculture and Food Economy, "The Program of Development in 1983-1985 and to 1990" states: "In Poland's climatic and soil conditions, the basis of good and stable soils is above all drainage. Its shortage does not allow for the rational use of fertilizers and biological means, mechanization and the planning of particular types of plants. Drainage can shorten growing time from 2 to 4 weeks.... One should emphasize that agricultural uses requiring drainage also fall among the best soils."

Drainage measures (the construction of particular drainage devices) require around 9.8 million hectares. This means that the results of agricultural production and antiflood protection for 52 percent of the general area of agricultural uses (46 percent is cultivated soil and 71 percent is meadow) are dependent on rapid drainage and also on the conservation of already-existing equipment. Unfortunately, the implementation possibilities are not proportional to the needs. As indicated in information supplied by Engineer M. Rytelowski, director of the Investments, Appraisal and Analysis Division, Department of Drainage and Water Supply to Village and Agriculture, 6.3 million of agricultural lands currently are drained (of which 1.9 million are meadow and 4.4 million cultivated land). This is 36 percent of the required needs. In fact, the needs are much greater. Drainage equipment, like everything else, is subject to the aging process (its amortization period is 30-50 years). A considerable portion also originated during the interwar period, so one can see the result without too much effort.

The equipment indicator varies from 0.5 to 2.3 percent (from 32,000 to 145,000 hectares). This means that in order to increase the drainage area, we have to reclaim annually at least 120,000 hectares (about 2 percent). We have to add that the indicator showing declining equipment does not show the actual state of the equipment.

The above-cited "Program" anticipates that in 1983-1985 there will be 400,000 hectares reclaimed (in the next 5-year period, 1 million hectares). But only 75 percent of the plan will be implemented, i.e., 300,000 hectares.

Difficulties in implementing the plan began as early as 1977, when increasing shortages in equipment, transport and basic materials (ceramic pipe and cement), as well as a reduction in employment, suddenly caused a breakdown in every labor area. We did not have to wait long for the results. In 1980-1981, we were able to reclaim only 76,000 hectares.

In the view of many experts, there must be a greater use of existing systems, as well as a restoration and modernization of that equipment. There already have been some improvements. It is important to rebuild production potential, and

the government has ordered new drainage equipment (this means a better supply of basic materials). However, the underlying problem is the shortage of machinery and lack of disposal by the ministry (control is on a regional basis). One hundred and eight enterprises simply do not have the means to carry out their tasks.

#### A Chance for the Future

The duty to maintain equipment properly rests in the hands of the landholders who use it for drainage purposes. They are organized into water cooperatives and have the responsibility to maintain the water systems. According to information supplied by Engineer Teresa Szwoch, specialist from the Division of Water Use and Drainage in the Ministry of Agriculture, there were 2,466 cooperatives registered in 1982, encompassing over 5 million hectares. The owners of other reclaimed lands are state farms and collective farms. Both of these employ their own specialty teams.

How do the cooperatives work? In various ways. In provinces like Bydgoszcz or Poznan, where the tradition of working with self-governments exists, there are good results. The average value of labor is more than 1,000 zlotys per hectare. But there are some provinces where the value does not go much over 200 zlotys. The average value throughout Poland was 305 zlotys in 1981 and 541 zlotys in 1982. This is not much, especially when one considers that 10 percent of the sum is a subsidy from the gmina.

The total value of drainage work accomplished by the cooperatives in 1981 was more than 1.5 billion zlotys, and in 1982 3 billion zlotys. One can see that progress has been made. However, we have to take into consideration the inflation factor, which reduces the progress indicator from 3 to 1.77.

The employment situation existing in the cooperatives also is not very good: 2,804 engineers and office workers and not many more than 10,000 permanent laborers (data from 1982). This means that for every specialist there are four laborers. Many of these laborers also cover a broad land area.

All of these shortages are due to lack of money. The farmers do not want new experiences, and it is not difficult to understand this. During the 1970's there were many changes of function within the water cooperatives. The administrative changes sometimes led to negative conclusions. Some of these organizations were changed from specific land drainage entities into anonymous creations having nothing in common with the membership. This is why some of the cooperatives returned to their former structure in 1980-1982. These factors also did not contribute to the development of agricultural self-government. In light of these facts, can the existing state of affairs be corrected? However, concrete means are required.

A great deal of assistance in this area may be the initiative of the Polish Episcopate the Aid Fund for Agriculture. Income from the sale of machinery, fertilizers and plant protection means obtained from abroad can be earmarked for land drainage. Therefore, it would be possible to concentrate the production means of state enterprises on the construction of new equipment or the maintenance of existing equipment. However, authentic self-government under the control of the water cooperative would have to be formed. We then would find the way out of our problems.

ROMANIA

BRIEFS

PLANS FOR BIOGAS PRODUCTION--Ten tractors which have been converted to operate on biogas have been tested on the grounds of the "Albota" Agricultural Testing Facility in Romania. The conversion to this inexpensive fuel has proven effective. Large biogas facilities are currently being constructed in many counties of Romania. The largest "Biogas Agrarian Station," which is producing 8,000 m<sup>3</sup> daily, is being built near the Tomesti Hog Feeding Facility in Iasi County. The "30 December" Agrarian Industry Enterprise near Bucharest already yields up to 1,200 m<sup>3</sup> of biogas per day. By 1985, 3,900 biogas facilities are supposed to exist in Romania. [Text] [Leipzig URANIA in German No 1, Jan 84 p 12]

CSO: 2300/520

NUMBER, KIND OF ORGANIZATIONS OF ASSOCIATED LABOR

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 11 May 84 p 3

[Article by S. Sindolic: "A Decreasing Number of Basic Organizations of Associated Labor"]

[Text] Last year and early this year there has been an increase in discussions on the position and role of organizations and working communities and on the forms of associations in the economy. An increased number of referendums were held to decide on the "status transformation" of organizations of associated labor. Even as these discussions were in progress, a rise in the number of organizations and working committees continued. There were 95,210 organizations in existence in 1978 and during the next 2 years the number rose to 108,945 and in 1982 a total of 117,876 was reached. By mid-1983, the total number of organizations and committees in our country was even larger, 119,767.

Two tendencies are apparent by analyzing the changing number of organizations and working communities in the economy and the types of organizations and associations:

First, a particular characteristic in industry and agriculture and several other areas and branches has been the merging of two or more basic organizations to form a larger basic organization or a unified labor association without a basic organization of associated labor (OOUR).

Second, the separation of production OOUR from the structure of commercial work organizations, and production work organizations from the "so-called" horizontal composite organizations of associated labor (SOUR's).

Insignificant rise in number of SOUR's

On the whole, these discussions on the types of organizations and the forms of associations, indicate changes towards enlarging small OOUR's and searching for methods of more rational management. This new trend differs considerably from the tendency set at the time of the establishment of the law on which supported formation of numerous OOUR's, especially in industry, agriculture, communications, civil engineering and in other departments and branches (commerce and crafts industry).

Comparing the changing number of organizations to the types and forms of associations, certain economic modifications are indicated, especially within the major contributing organizations of the total in existence. The trends are evident when the following data is compared. (The 1983 statistics represent data as of 30 June 1983.)

Form	1978	1980	1982	1983
Basic organizations of associated labor	19,203	20,450	20,935	20,841
Work organizations without basic organization of associated labor	14,269	13,940	13,925	13,955
Work organizations with basic organization of associated labor	3,812	4,321	4,427	4,410
Composite organizations of associated labor	286	373	424	427
Working communities (collective) of organization of associated labor	4,173	5,033	5,273	5,280

Compared to 2 years ago, mid-1983 showed a decrease of 94 basic organizations of associated labor. However, there were 20 new work organizations without basic organizations of associated labor and a decrease of 17 work organizations with basic organizations of associated labor. Increasing the numbers of composite organizations of associated labor continues, but presently at a slower rate, which parallels the trend of working collectives of organizations of associated labor. Elaboration on these trends will be possible when complete statistics for 1983 are available. In the meantime, these transformations reflect certain trends which are apparent in specific economic areas.

#### What is economically justified

Considering at this time only the changing number of organizations and associations in the economic areas where the forms of associating are most expressed, several basic characteristics and tendencies are evident. In mid-1983, the number of organizations of associated labor in both industry and mining was 6,122 which had increased by 16 organizations during the two preceding years from 6,106. In the same time period, the number of basic organizations of associated labor in agriculture and fishing decreased from 1,237 to 1,218. Construction showed a similar decline in the number of basic organizations of associated labor from 1,558 in 1982 to 1,550 by mid-1983, while the number in communications and transportation increased from 1,482 to 1,484 and the number of basic organizations of associated labor in trade also declined from 2,982 to 2,916. Two years ago, in the tourism and catering industry there were 1,043 basic organizations of associated labor, which was reduced to 1,032 by mid-1983.

The number of labor organizations without basic organizations of associated labor increased from 13,929 in 1982 to 13,955 by mid-1983.

Similar increases are noted in this form of organizations in industry and mining from 1,994 to 2,004 but the number declined in agriculture from 466 to 464 as it did in construction from 753 to 739. Communications and transportations showed a slight increase from 1,482 to 1,484, while trade recorded a decline from 2,982 to 2,916 in labor organizations without basic organizations of associated labor. An insignificant increase from 453 to 456 labor organizations in tourism and catering was noted.

Concerning work organizations with basic organizations of associated labor, the number decreased slightly from 4,427 to 4,410 while individual branches recorded only slight changes in the leading economic areas during the same time period. Similarly, there was only an insignificant increase in the composite organizations of associated labor from 424 in 1982 to 427 by mid-1983. In conclusion, it should be noted that the number of working collectives of organizations of associated labor remained almost unchanged from 5,273 to 5,280.

Within the next several months, data comparing the organizations in economic and non-economic sectors will be available. At that time, it will certainly be possible to extend a more complete evaluation of these trends. However, the continuous increase in the number of basic organizations of associated labor peaked in 1982, only to manifest an opposite tendency by mid-1983. It is realistic to expect that the trend continued through the latter part of 1983, since a large number of basic organizations of associated labor which exist independently are not economically justified. Although, major changes in other forms of economic associating have not occurred, we await the total "status transformations" of the past year to ascertain a more detailed and documented study on the changing trends in this area.

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